Reported attitudes to the use of animals in science:

Artefacts of surveys?

By Julia Veitch

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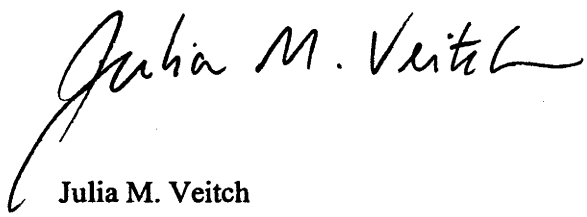
Faculty of Science

Australian National University

Declaration

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma at any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except when due reference is made in the text.



Julia M. Veitch

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Abstract

The animal rights movement has brought to the attention of the public their concerns about the way animals are used in science and whether they should be used at all. The research of scientists and psychologists who use animals has been directly affected by the mobilisation of public opinion and by animal rights actions. Much research has been generated on the subject of public opinions about the use of animals in science, seeming mostly to show that a large percentage of people believe animals should not be used for scientific experiments.

Material including books, research papers and survey instruments designed by social scientists on attitudes to animals generally and in scientific research were analysed discursively to see whether attitudes as measured were to some extent an artefact of the surveys themselves.

The results of the analysis showed that construction of items in the surveys and secondary sources generally show a negative orientation toward science in three major ways. First, experimental animals are described in terms that promote readers' identification with the animals as being like themselves and therefore deserving rights, including the right not to be used specifically in the way described by the material. Second, misinformation about actual animal use in science is structured, albeit unintentionally, into survey items. Third, science itself is described in terms that are difficult to identify with, being either abstract or portrayed as relatively trivial (e.g. cosmetics testing). The material analysed in this study was often found to have misinformation about the actual use of animals in science and the broad ethical purpose and value of the science that uses animals. The material also omits the ethical consideration of why animals are used in experiments rather than humans.

Future effort needs to be put into gathering data on what people think about animals in research in a way that is both informed about the wider ethical considerations of the use of animals in science and that is sensitive to how variable and context-dependent people's responses are.

Contents

Chapter Three: Research methodology

Chapter Four: Analysis

Appendices

Chapter One: Introduction

1.1 Background to the Study

The use of animals in research has been a controversial issue, particularly in the last 25 years. Scientists and university public relations people tend not to speak of the use of animals in research (Rowan, Loew, & Weer, 1995). The result is that the general public know little or nothing about the role of animals in science and medicine. Animal rights advocates have therefore been in a strong position to fill the void with their ideas.

Animals are used in research to develop and test ideas in physiology; to study pathologies; to develop drugs; and ensure that medical and cosmetic products are safe for human and animal use. Two thirds of the Nobel prizes in medicine in the 20th century were awarded for research using animals (NABR 2001). However, over the last twenty five years animal rights advocates have actively and successfully campaigned to reduce animal use in science and to increase animal welfare regulations. They have used legal and illegal means to do this, ranging from lobbying politicians and letter-writing campaigns to scientific institutions, to death threats to scientists, laboratory break-ins, theft and release of animals and arson (Breo, 1990; Day, 2000; Rowan et al., 1995).

The logical extreme of the animal rights advocates' philosophical position requires that no animals be used for scientific (or indeed any human) purpose. Scientists and others argue that if this came about, it would slow down or prevent the acquisition of certain types of knowledge, and the development of applications deriving from that basic knowledge. The logical extreme of the scientists' position is that use of animals for research is useful and ultimately necessary for increased human and animal welfare (Singer, 1993).

Over the last twenty years, social scientists have studied attitudes to animals generally, and specifically to animals in research, of the following groups of people: animal rights activists, animal rights supporters, scientists who use animals in their research, students and the general public. They have found that the public support for the use of animals in research is much less than it was fifty years ago (Rowan et al., 1995), and have tried to discover why.

It seems from many surveys that several variables influence people's attitudes to animals. The surveys' results suggest that one is more likely to be against the use of animals in scientific research if one is female, young, vegetarian, has owned or does own pets and/or does not take prescription drugs. Attitude to science and level of knowledge of science do not consistently influence or vary with attitude to the use of animals in research. None of these demographic variables have changed a great deal over the last 25 years. The question arises, what does account for the apparent decreased support of the scientific use of animals in research?

1.2 Statement of the problem

Means determine ends. The instrument used to measure attitudes can to some extent determine the outcome. Is the measured decrease in support of the scientific use of animals to some extent an artefact of the survey instruments?

For example, attitude researchers have seldom asked the public what they understand by the phrase 'animal rights'. Therefore it is not possible to know from the surveys whether the public supports increased attention to animal welfare, or outright abolition of animal use. The latter is unlikely since approximately 95% of those surveyed eat animals. The only clear idea to emerge (as it were incidentally) from the studies is that the public's concept of the 'rights' of animals does not protect animals from being killed for food.

Some studies have identified inconsistencies in attitudes amongst animal rights activists and the public to the use of animals in research and other areas, but either have not developed or commented on them or interpreted them in terms of imperfectly understood motivations. Many studies embody inconsistencies in their survey instruments, with different treatment of items relating to science, agriculture and other uses of animals. This can skew results.

This study analyses discursively the content of the survey instruments used to measure attitudes to animals. The descriptive words used, reference to type of animals and to

specific uses can indicate tacit priorities and biases in the instruments of which the researchers themselves may not be aware.

1.3 Purpose of the study and research questions

The purpose of this study is a meta-analysis of the work done on surveying attitudes to animals in research. The research questions addressed are whether there are inconsistencies and biases present in the research on attitudes, and if so, what they are. The study discursively analyses the papers and survey instruments of people doing research on attitudes to animals in general and in scientific research. It includes books written as popular digests of the subject. To approach the question from a different angle, the study also includes a broad content analysis of one popular science magazine, *New Scientist.*

Research questions and implications:

1.3.1 Do the survey instruments of attitude researchers have a bias, whatever it might be? If so, is it because attitude researchers' priorities and assumptions about the public's understanding of science and scientific use of animals have influenced their design of questionnaires and surveys measuring attitudes to animals in research? The crucial problem with bias is that it will influence results and in part manufacture the attitudes the instruments set out to measure.

1.3.2 Are respondents asked to define what they understand by the phrase 'animal rights'? If not, the conclusions drawn from survey data are weakened as it is not possible to know whether people support improved animal welfare, or outright abolition of animal use. Without knowing what people understand by animals having rights, the debate cannot progress.

1.3.3 Have the priorities of the animal rights movement influenced the attitude researchers or more fundamentally, in discourse analytic terms, are there features of an underlying "social matrix" that are possibly generating any evident biases?

1.4 Significance of the study

There is apparent decreased public support for the use of animals in research though a majority still believe that animals are useful in scientific research and its applications. Surveys show that about 75% of the US public accept the use of animals in research while about 65% actually support the practice. This is down from 85% support in 1949 (Rowan et al., 1995). One Australian survey showed a support rate of 69% (Hills, 1994). The illegal tactics of harassment, threats and intimidation of scientists by animal rights activists had dropped off by the mid 1990s (Rowan et al., 1995) but have not ceased (Lancet, 2001).

If the animal rights movement's focus and views on animals in scientific research are accepted, whether intentionally or not, as the main issues on which to base surveys, the data collected from the surveys will fail to give due attention either to the beneficial outcomes of scientific research using animals or to the welfare of the vast majority of animals used by humans. Furthermore, the unintended consequence of publication of results from biased attitude surveys may be to promote misinformation about science, its use of animals and what people really do think on the issue, with real consequences. For example, a widespread stigma remains attached to using animals in scientific research. The Australian airline Qantas had until October 2001 a ban on carrying animals intended for research use (T.R. Vidyasagar, personal communication, October 27, 2001).

1.5 Limitations of the Study

1.5.1 Sample

The analysis is restricted to Anglophone, textual discourse including research articles on attitudes, books and an electronic archive of a popular science magazine. The principal objects of analysis are survey instruments. Not all the papers publish the data collection instruments, however, so there is an effective assumption that those survey instruments available for analysis are representative of the corpus. It may be argued that I have used too small a sample (11) of survey instruments in this study. However, small samples are usually not a problem when using the technique of discourse analysis. Potter and

Wetherell (1987) argue that small samples are "generally quite adequate for investigating an interesting and practically important range of phenomena" (p.161) as they assert it is possible for a few people to generate a large number of linguistic patterns. The limitation of the discursive material of the surveys is that they are formal and highly structured. They are less rich, detailed and variable than talk. This study has not included interviews as discursive material for analysis.

1.5.2 Technique of analysis

The technique of discourse analysis concentrates on the text, in and of itself. It does not take into consideration anything extraneous to the text, including hypothesised internal psychological or cognitive structures or mechanisms such as an attitude or an intention. Therefore, this analysis is not concerned with what social scientists might mean with respect to their survey constructions, or what their own attitudes could be, only with the effects of the language used.

The *New Scientist* discourse analysis provides data on whether the terms "animal rights" and "animal welfare" are mentioned in the contexts of science and agriculture. In itself, it is a simple counting exercise, indicative only of a trend, which is a limitation. However, it provides independent confirmation of similar tendencies with respect to representations of animals in the attitude survey instruments.

This study does not answer the question of whether there is in fact a genuine decline in public support for the use of animals in research.

1.6 Overview of the Study

A further four chapters comprise this thesis. Chapter Two contains a literature review. Chapter Three outlines the method of the study. Chapter Four has a simple analysis of a scientific magazine database and detailed content analyses of survey instruments and secondary sources. Chapter Five discusses the results, makes recommendations for further work, and concludes the study.

Chapter Two: Review of Related Literature

2.1 Introduction

Chapter Two describes the literature on attitudes to animals in research from several perspectives. The primary source material is the surveys conducted by psychologists to study and analyse public attitudes to animals in research. Since the topic includes both animals and science, there is a section describing how psychologists have tried to tease out the relationship of attitudes to science and to animals. Scientists who work with animals also have views on how and why public opinion is formed regarding the subject and how to remedy the problem of public misunderstanding through an increase of scientific literacy. I have provided a summary of scientists' opinions. The concept of scientific literacy is not simple, so there is a section detailing the different models of scientific literacy, and how they inform both survey construction and wider discussion of the issue of use of animals for scientific research.

2.2 How attitudes to animals in research came to be a subject of investigation by social scientists

The 1980s saw a massive rise in animal rights activism, particularly with respect to the treatment of animals in scientific and medical research. There were death threats to scientists and hundreds of laboratory break-ins doing up to $10,000,000 worth of damage (Day, 2000). Membership of animal advocacy organizations swelled into the hundreds of thousands, and their budgets to millions of dollars, enabling successful lobbying of governments for changes to animal welfare legislation with regard to scientific research (NABR, 2001; Rowan et al., 1995). Scientific research using animals was, and continues to be, under threat (Lancet, 2001). As a consequence of this social phenomenon, social scientists began studying attitudes to animals in research amongst animal rights activists, scientists and the general public. Therefore, there is a considerable body of literature on the public's attitudes to animal use in general and in particular to scientific use, generated mostly by US researchers, from about 1980 onwards.

2.3 What the surveys have sought to find out

The attitude surveys have tried to discover variables influencing attitudes to animals, including gender (Aldous, Coghlan, & Copley, 1999; Broida, Tingley, Kimball, & Miele, 1993; Eldridge & Gluck, 1996; Furnham & Pinder, 1990; Herzog, 1996; Mathews & Herzog, 1997; Nibert, 1994; NSB, 2000; Pifer, Shimuzu, & Pifer, 1994; Pifer, 1994, 1996; Plous, 1996b), age (Nibert, 1994; NSB, 2000), pet ownership and early experience with animals (Bowd, 1984b; Braithwaite & Braithwaite, 1982; Driscoll, 1992; Jamison & Lunch, 1992; Paul, 1995; Paul & Serpell, 1993), knowledge of animal products (Bowd, 1984b; Plous, 1993), religious affiliation (Bowd & Bowd, 1989; Driscoll, 1992; Kruse, 1999), environmental concern (Kruse, 1999; Pifer et al., 1994), scientific knowledge/literacy (NSB, 2000; Pifer et al., 1994; Pifer, 1996; Plous, 1997; Takooshian, 1988), education level (Furnham & Pinder, 1990; Pifer, 1994), concern for civil liberties (Nibert, 1994), early home influences (Pifer, 1994), and personality factors (Mathews & Herzog, 1997). Lifestyle variables have also been studied, such as vegetarianism, wearing of fur or leather clothes, taking prescription drugs and animal hunting (Aldous et al., 1999; Plous, 1997; Takooshian, 1988).

2.3.1 Gender

Almost all the studies found a difference, usually statistically significant, with respect to gender. Men were more supportive than women of the research and teaching that used animals, and women were more supportive than men of animal protection measures. Eldridge and Gluck (1996) did a study on gender and animal research, and found:

> ... women college students in this sample [of 139] seemed to be more willing than men to make personal sacrifices to protect animal lives, were more likely than men to question biomedical research with animals on scientific grounds, reacted more emotionally and empathetically to the suffering of animals, and were generally more concerned about the plight of research animals. Women also saw a need for more restrictions on animal research. (p.249)

Eldridge and Gluck's summary covers exactly what other researchers found in varying degrees. For example, Kruse (1999) found that more women display higher levels of animal rights advocacy, support for the extension of moral rights to animals and opposition to the use of animals in medical testing than do men (p.185). Mathews and

Herzog (1997) found gender was a significant predictor of attitudes towards animals (p.4). In their study, women had higher scores i.e. more concern for animals, than men and accounted for 19% of the variance in scores. Pifer (1994; 1996) in a longitudinal study of about 3000 adolescents, surveyed at age 12 then again at age 17, found that "the consistent supporters of animal research were predominantly male (72%), while the consistent opponents of animal research were predominantly female (70%)" (p.300). Pifer, Shimuzu and Pifer (1996) assessed public attitudes to the use of animals in research across 15 nations (approximately 17,000 participants), and found that in all of them more women than men were opposed to research using animals. 10 of the 15 nations had statistically significant differences. Aldous et al. (1999) found that of their sample of 2000 British people, a total of 64% disapproved of animal experimentation. The gender breakdown found 71% of women disapproved compared with 57% of men, similar to Pifer's findings (1994; 1996). An earlier British study, by Furnham and Pinder (1990) found that gender is "a powerful and consistent correlate of attitudes with females being more anti- than pro-animal experimentation" (p.447). Hills (1994) found that 7% more men than women in her survey of 303 Perth residents supported animal research and another survey, of US college psychology majors, showed that 15% more men than women supported animal research (Plous, 1996b). Likewise, Bowd and Bowd (1984) found that women registered more humane attitudes (p.22). On a slightly different theme, Herzog (1996) found that women "were significantly more likely than men to ascribe mental capacities to animals" and that those "who attribute high levels of mental capacity to animals were more concerned about animal welfare issues" (p.19). With respect to membership in animal rights organizations Jamison and Lunch (1992) found that it was preponderantly female: in their survey the breakdown was 68% female, 32% male (p.445).

2.3.2 Early experience with animals including pet ownership

Studies found that early experience with animals including pet ownership influenced attitudes towards animals, though it accounted for very little of the variance in scores. Jamison and Lunch (1992) found that 87% of animal rights activists approved of keeping pets, and that "intensely emotional experiences with pets were a significant mobilizing force in the activists' lives" (p.448). Driscoll (1992) found that 70% of her sample of the general public owned pets. The pet owners, similar to the Jamison and Lunch sample of

activists with respect to their emotional attachment to their animals, rated use of animals in experiments significantly less acceptable than non-pet owners ($p<0.0003$). Paul (1995) found that different kinds of early experience with animals made a difference to attitudes. Animal researchers were more likely to have had early association with farm animals, whereas animal activists reported that pets had affected their attitude toward the use of animals. Paul and Serpell (1993) similarly found a positive association between childhood involvement with pet animals and self-reported adult concern about the treatment and welfare of laboratory, farm and wild animals. Bowd's (1984) study of 104 ten year old children found that ownership of pets reduced fear of animals and increased identification with animals. Interestingly, in general the children knew that animal products such as milk and cheese came from live animals, but they did not know leather and hamburger meat came from animals that had had to be killed (p.144). While Braithwaite and Braithwaite (1982) were not looking for effects of early experience on attitudes to animals, they found that people objected more to dogs than to monkeys being used in experiments. They suggested that "the closeness of human beings to pets is a more important factor in determining antivivisectionist attitudes than is evolutionary similarity to man." (p.43).

2.3.3 Age

All surveys that took age into account consistently found that it was significant: generally the younger the person, the more likely he or she was to be in favour of animal protection (Aldous et al., 1999; Driscoll, 1992; Furnham & Pinder, 1990; Jamison & Lunch, 1992; Nibert, 1994; NSB, 2000; Plous, 1991, 1998). The chief researchers for the National Science Board, Linda Pifer and Jonathan Miller, make the point that a person over time may become more conservative, or that older people at the time the survey was done simply have more conservative attitudes towards animals as a result of the more conservative (with respect to animals) times in which they grew up. Furthermore, older people or their friends or relatives are more likely to have experienced the benefits of medical science in their own lives. None of the surveys tease these issues out.

2.3.4 Religious affiliation

Correlation with religious affiliation generally achieved significance in the studies, though it accounted for little of the variability in ratings. In general the studies were conducted on white Anglophone populations with predominantly Christian cultural backgrounds. Sample numbers for religious affiliations such as Hinduism or Buddhism with their corresponding different outlook on animals were so small they could not be meaningfully compared. However, no consistent pattern emerged across the studies. Some studies found that Catholics and people with no religious affiliation were more supportive of the idea of moral rights for animals than were Protestants (Driscoll, 1992; Kruse, 1999) while others found the reverse (Nibert, 1994). Bowd and Bowd (1989) found that "more theologically liberal [Christian] groups tend to display more positive attitudes toward animals, with Quakers scoring highest and Baptists lowest" (p.22). And one British study found *no* significant relationship between religious conviction and attitudes to animal experimentation (Furnham & Pinder, 1990).

2.3.5 Lifestyle variables

'Lifestyle' refers to the choices an individual makes about how to live his or her life. Variables taken into consideration as potential correlates with attitudes to animals were vegetarianism (Aldous et al., 1999; Braithwaite & Braithwaite, 1982; Broida et al., 1993; Furnham & Pinder, 1990; Kruse, 1999; Plous, 1991, 1993, 1998), level of education (Jamison & Lunch, 1992; NSB, 2000; Pifer et al., 1994; Plous, 1998), fur or leather wearing (Aldous et al., 1999; Plous, 1991, 1998), hunting animals for recreation (Aldous et al., 1999; Takooshian, 1988), and taking prescription medicine (Aldous et al., 1999). In general, only the variable of vegetarianism was statistically significant. While across the surveys, about 5% of the general public were vegetarian, between 29% and 100% of animal activists surveyed were vegetarian (Paul, 1995; Plous, 1998). Plous (1991, 1998), Furnham and Pinder (1990), Broida et al. (1993) and Aldous et al. (1999) found that people with vegetarian diet preferences were generally much more concerned about animals. Both Plous (1998) and Furnham and Pinder (1990) found that of all their demographic variables, vegetarianism had the strongest correlations with anti-animal experimentation attitudes. Broida et al.'s (1993) results showed that of various 'social

attitude' factors, vegetarianism as part of their cluster of 'behavioural activism' factors was the *only* statistically significant predictor of attitudes. Leather wearing was not perceived as an important issue, but fur coat wearers, hunters and those who knew animals were involved in the process of developing prescription drugs were far more likely to support the use of animals in research (Aldous et al., 1999). About one third of the surveys in my sample took into account people's behaviour with respect to their direct use of animals.

2.3.6 Liberal outlook

Liberal outlook or sensitivity to the 'other' seems significant in attitudes to animals and their welfare, though again, it only accounts for a small degree of the variance. The 'other' can be variously nature, environment, animals, religious nonconformists, minority or oppressed groups, etc. On issues of civil liberties, Nibert found that those who supported rights for abortion, non-whites to live where they chose, and for a law requiring permits to own guns were significantly more likely to support rights for animals. He concludes, "People who believed animals have rights ... generally report[ed] less tolerance for violence and more acceptance of human diversity and choice." Other surveys had similar findings. Kruse (1999) found that sensitivity for the environment and nature was significantly linked to concern for animals. Jamison and Lunch (1992) found a cluster of inter-related sensitivities to environment, women's issues and animals. Furnham and Pinder (1990) found that people who hold views on the left, or more liberal, of the political spectrum tend to be more concerned about animal use than those on the right. Paul and Serpell (1993) found that more humane, tolerant adult attitudes are associated with positive attitudes to animals.

In summary, it seems that gender, early experience with animals, pet ownership, age, lifestyle choices and liberal outlook influence people's attitudes to animals to some extent. Few other variables consistently achieve significance in the analysis of results, including attitude to science and level of knowledge of science, which I discuss in the section below.

2.4 Science, scientific literacy and attitudes to animal research

2.4.1 Surveys

Attitudes to animals in research do not necessarily correlate with scientific literacy. Takooshian (1988) found that attitude to animal research is more predicated by attitude to animals than faith in science in a survey of the general public and scientists. He writes, "It seems that one's endorsement of animal research is based significantly more on a basic non-recognition of animal rights than on a faith that research leads to scientific progress" (p.8). Plous (1998) found that "the prospects for compromise [between scientists and animal activists] appear to depend more on activists' level of commitment and absolutism [as registered by their commitment to a diet low in animal products] than on their views about animal research per se" (p.52). That is, similar to Takooshian's survey of the general public, activists' attitude to the use of animals in science was most strongly predicted by attitude to animals rather than to science. Takooshian also found that the public and scientists "have equally mixed feelings about vivisection" (p.8) and that within each group people felt strong ambivalence.

Surveys of animal activists show that they tend to have high levels of education and strong interest in public affairs (Jamison & Lunch, 1992), so they would not be scientifically 'illiterate' under the National Science Foundation definition (Miller, 1998). However, Jamison and Lunch found that 52% of the activists surveyed in their sample of 412 believed that science does more harm than good, and that most (they do not give a figure) were "very sceptical" of science. Scientists were lumped together irrespective of discipline and described stereotypically as "men in white coats responsible for dreadful research on animals" (p.453).[1] Broida et al. (1993) also found a significant degree of scepticism about science amongst the proportion of their sample population of 1055 college students who registered anti-vivisectionist attitudes.

[1] The satirical Canadian cartoon series "Aaagh! It's the Mr Hell Show" broadcast on SBS had one episode on science, shown September 22, 2001. Mr Hell is wearing a white lab coat, of course, and in his lab has a cat hooked up for electric shocks, a dog addicted to smoking and a rabbit wearing lipstick. Torturing animals seems to be a conventional icon of science, though the episode is devoted to demonstrating that the motivation for all science is the will to power.

Linda Pifer (1994) did international studies involving approximately 17,000 people across 15 nations on public attitudes to animal research to test the hypothesis that "opposition to animal research can be directly linked to the general level of scientific illiteracy" (p.5). She found that measures of scientific knowledge did not have a consistent relationship with attitudes to animal research, though they were statistically significant in all countries except France and the United States. She found that in some nations there is a negative relationship, where those with higher levels of scientific knowledge were more likely to oppose animal research. Denmark had the strongest positive relationship and Belgium had the strongest negative relationship. The range of support and opposition to animal research across countries is highly differentiated: from 35% (Portugal) to 68% (France) were opposed to animal research and from 27% (France) to 53% (United States) supported it. That is to say, overall across all countries there was more opposition than support expressed about animal research.

Pifer's (1994) study on young people found that "those who opposed animal research had a slightly higher mean science score (56) than did those who supported animal research (54)." (p.300). The higher the score for science, the more positive the participant felt about science. Pifer did the survey twice with the same participants, first in 1987 when they were in Year Seven then five years later in 1992 when they were in Year Twelve. She found over time that those who moved from opposition to animal research to support had higher mean science scores than did those who moved from support to opposition. A breakdown by sex showed that boys had the same science scores whether they supported or opposed animal research, but "girls who supported animal research had lower mean science scores (47.0) than did girls who opposed animal research (55.8)" (p.301). So the picture Pifer's data creates has no consistent relationship between science and animal attitudes.

Following up her 1994 study, Pifer did a further study of over 2000 young people in their early twenties to unravel the relationship between gender, scientific literacy, attitudes toward science and attitudes toward animal research (Pifer, 1996). She did find a relationship between scientific literacy and attitudes to animal research, namely that the higher the scientific literacy, the less likely a person was to oppose animal research.

However, her analysis could not explain "the propensity for young women to oppose animal research more frequently than young men. Young women do not oppose animal research simply because they know less about science than young men." (p.9). Some other psychological features, Pifer suggests, such as nurturance, empathy or feminist attitudes are influencing attitudes to animals in research in women but not in men.

New Scientist commissioned from MORI and published a survey of attitudes to animals in research in 1999. It is different from other surveys in this sample, in that it provides the opportunity for individual participants to record variable responses (Aldous et al., 1999). It features 'warm start' and 'cold start' questionnaires which both ask the question whether scientists should be allowed to experiment on animals. The 'warm start' questionnaire leads into the question with information about various high profile diseases for which scientists are working to find therapies. The sample of 2000 people was randomly divided in two, and half did one type of questionnaire, half did the other. The researchers found that the "cold starters" were hostile to animal experimentation: 64% against, 24% for the use of animals. The "warm starters" were quite different: 45% for and 41% against, which represented a 22% swing of opinion. The justifying preamble providing a context for use of the animals made a "huge" difference to the way people responded. Aldous et al. (1999) found that there were stable opinion groups: fur coat wearers, hunters and prescription drug takers who knew their drugs had been tested on animals were more than 50% in favour of animal use in research even on the "cold start" questionnaire. Members of animal welfare groups were against the use of animals in research in both questionnaires. The biggest "swingers" were 'cruelty-free' cosmetic buyers.

Aldous et al. (1999) provided different scenarios with different animals and outcomes, and they obtained differentiated results: from 83 per cent approval of painless experiments on mice to test drugs for childhood leukaemia, to 92 per cent disapproval of potentially fatal experiments on monkeys to test cosmetics. Their respondents did not object intrinsically to using animals. The questionnaire structure gave them the opportunity to assess the costs and benefits of individual experiments before deciding whether they approved or disapproved. Analysing the cost-benefits entailed knowing the type of animal, the degree of suffering imposed on the animal

and the intention of the research. The species involved made a difference, monkeys being less acceptable than mice. So their study found not only that lifestyle – e.g. hunting for sport, being vegetarian, or taking prescription drugs - influenced attitudes, but also the process of doing a cost-benefit analysis.

Aldous et al. (1999) suggest that their poll "reveals a disturbing gap in people's knowledge" as 94% of their sample did not know that prescription drugs are routinely tested on animals before human testing and final release onto pharmacy lists. Would it make any difference to the public's attitudes to the use of animals if they did know? The remaining 6% of the sample who had been taking a prescription drug and knew that the drug had been tested on animals were

> more favourably disposed to animal experimentation than the larger number who said they weren't aware their drugs had been tested on animals... [T]hey were more positive about animal experiments than everyone ... polled except the hunters and fur coat wearers. (Aldous et al., 1999)

The implications from the *New Scientist* survey are that a little knowledge and involvement in decision-making make a large difference to many people's attitudes and that people are not against using animals as such.

In summary, the findings of the 1999 *New Scientist* survey suggests that a pragmatic and utilitarian attitude to animals – what Takooshian (1988) calls "a basic non-recognition of animal rights" -- enables one to do cost-benefit analyses and keep in mind the purpose of the scientific work. However, pragmatism does not exclude concern for animals' wellbeing.[2] Generally, attitude survey results show that a positive attitude to or knowledge of science will not necessarily mean one feels comfortable with the use of animals in science.

[2] David Oderberg notes that if it is argued that animals do not have rights, in the public's eyes that is tantamount to saying that the animals have no moral standing at all (Oderberg, 2000, p.37) which he believes is a misconception. He points out that non-recognition of animal rights does *not* mean abrogation of duty of care towards animals, i.e. a utilitarian attitude to animals does not exclude care or concern for animals. Oderberg also argues that animals can only have rights if they have duties.

2.4.2 What scientists think

2.4.2.1 Education will reduce hostility

Scientists in general believe that provision of correct information will solve the problem of hostility toward animal experimentation. They are strongly committed to the welfare of their animals and to reducing the numbers used and believe that if the public know this, there will be less hostility.

An issue of the journal *Neuroscience* (Vol. 57, No. 1, 1993) has six essays by scientists devoted to issues of how to deal with opposition to animal research. The six scientists each have different considerations. Ádám believes that the public are "uneducated and uninformed in crucial questions of medicine and biology" and that the animal rights groups are transmitting "a distorted set of information to the public about bioethical problems and their solutions" (Ádám, 1993, p. 201). What the scientists must do, says Ádám, is educate – the problem is scientific illiteracy. Naquet argues that the ethics of scientific experimentation need to be remembered: "there [is] a good reason why the scientific community had internalised the propriety of using animals in research – to protect human rights" (Naquet, 1993, p.184). Singer does a detailed discussion of the scientific potential for alternatives to the use of animals in a general discussion of the three scientific Rs: Reducing numbers of animals used through better experimental design, Refining procedures to minimise suffering for the animals, and Replacing animal work with alternative methods (Singer, 1993). Van Sluyters outlines a step-by-step program for public, non-violent defence against antivivisectionist attacks. It entails provision of detailed accounts of the animals' welfare and of ethical underpinnings for the experiment to advocates of the research institution, the funding bodies and science advocacy organizations (Van Sluyters, 1993). Stone comments that there are two notable features of the debate over the use of animals in research: "its longevity and its obstinate sterility. To antivivisectionists it has been a century-long struggle against blind evil; to scientists a century-long struggle against blind ignorance" (Stone, 1993, p.211). Stone's own strategy is to "keep my own lab and my own scientific work in moral order, run with a purpose, and with a care for animals, that meet and if possible go beyond community standards" (p.213). Colin Blakemore, an eminent neurophysiologist and outspoken advocate for

animal research, believes that the animal rights debate is "a battle for the hearts and the minds (and then the voting power) of the general public", so there is an urgent imperative to communicate and deal effectively with the media (Blakemore, 1993, p.217). Blakemore also commented on the 1999 *New Scientist* survey that its most intriguing finding "is the fact that a very modest statement about the possible benefits of animal research persuades a huge fraction of the British public to change their minds, converting 24 % support for animal experimentation into a slim majority in favour" (p.60).

A 1998 *Science* editorial says, "most people just don't understand what health researchers do... Scientists must communicate their message to the public in a compassionate, understandable way" (Conn & Parker, 1998). Breo (1990) in a *JAMA* article entitled "A question of scientific illiteracy" contextualises the controversy regarding use of animals in science by describing medical advances based on work with animals, then quotes from the executive vice president of the American Veterinary Medical Association: "This is a tough campaign because we have to use facts against emotions. We believe that education is the answer" (Breo, 1990, p.2565).

Nicoll and Russell, respectively a biologist and physiologist, were concerned about the negative effect on scientific endeavour and public attitudes because of animal rights movement activism (Nicoll & Russell, 1990). Nicoll and Russell analysed several thousand pages of animal rights literature, and found that almost two thirds of it was devoted to animal use in science and education. They contrasted the discourse with recorded animal use in the United States, 96.5% being for food and 0.3% for animal research (that is, about 320 animals were killed for food for each animal killed for research – similar proportions in Germany, being 300:1 (Singer, 1993)). From this, they worked out a "concern-to-use ratio" in the animal rights literature and calculated it to be 659 times higher for animal research than animal agriculture. That is, *on a per-animal basis, the animal rights movement published **659** pages discussing animal research for each page discussing animal agriculture* (Nicoll & Russell, 1990). Nicoll and Russell drew the conclusion that "the underlying motivation of this movement is anti-intellectual, anti-science, and misanthropic" and decided that the best counter-action to take was "educating the public and politicians as to the truth about animal research" (p.988).

2.4.2.2 Animal welfare is important

Among animal researchers there is consensus that animals need to have the best possible care and to have regulatory protection. A study done of animal researchers and psychologists who had respectively membership in International Animal Care and Use Committees (IACUC) and the American Psychology Association (APA) showed very strong support for inclusion of various vertebrate warm and cold-blooded species including rats, mice, birds, reptiles, fish and amphibians under the US Animal Welfare Act (AWA). A large majority favoured the inclusion of all warm-blooded animals, and of the cold-blooded animals only fish rated less than 50% support (Plous & Herzog, 1999). Paul's (1995) study of scientists and animal activists' perceptions of each other discovered beliefs in common between the two groups, namely that animals do experience pain and distress, and that their welfare is important, though not surprisingly they had different frames of reference and priorities. She found that animal researchers and animal rights activists "appeared to apply differential weight to the ideas of animal suffering and the value of science experimentation when making judgments about the admissibility of animal experiments" (p.9). The scientists believed animals were a necessary means to the vital end of making scientific discoveries, but that the animals' welfare was a high priority. In relation to the issue of increasing animal research in "the post-genome era", *The Lancet* asks "How then are scientists and scientific organizations to proceed? Certainly they should be adhering strictly to the 3Rs [Reduce, Refine, Replace] of animal research" (Lancet, 2001, p.817).

2.4.2.3 Summary

Scientists themselves care about their animals and that the work done with animals should be useful and morally defensible. They feel attacked, misrepresented and under enormous pressure to account for and defend their work as well as do it. They believe the public are ignorant and that education will solve the problem of public misunderstanding about what the scientists do and what the science is for. This belief subscribes to the 'deficit' model of science literacy where it is assumed that 'to know science is to like it' so all that is required is to fill in the lack of knowledge in the public with education. However, while the public may indeed be ignorant, developing a strategy based on the deficit model will

not effectively involve the public in the issue. Science literacy models and definitions are discussed in the next section.

2.5 Science literacy models and definitions

A common assumption in literature about the public understanding of science is that science disciplines are important to the well being of society (Fensham, Law, Li, & Wei, 2000). Furthermore, science 'literacy' is seen as being essential for the public to participate in an information-rich democracy (NSB, 2000). Both science and science literacy are seen as unequivocal goods.

Science 'literacy' is defined broadly speaking in two major ways: universal and context-dependent. For example, the National Science Foundation (NSF) of the USA has a universal definition. They regard science literacy as a combination of some degree of science knowledge such as 'The earth goes around the sun', and some awareness of scientific method such as the role and value of control groups (NSB, 2000). Other writers argue that science and every day life are both spheres of knowledge production, and the understanding of science in every day life is a process of creative reconstruction (Bauer & Gaskell, 1999). Their argument invokes context and relationships, which says (in simple terms) that science means different things to different people under different circumstances. Bauer et al. (2000) argue that scientific literacy is awareness of how the institution of science works rather than facts as such (Bauer, Petkova, & Boyadjieva, 2000). As the institution of science is contingent on social and political variables, this is a contextual rather than universal approach. Fensham et al. (2000) describe what they call a socio-pragmatic approach to scientific literacy. They see that people operate in particular social contexts with particular needs for scientific literacy, which consists of several dimensions relating to science: scientific and technological knowledge, awareness, values and policy/legislation (Fensham et al., 2000).

Such different definitions are working from different models, and also have varying degrees of explanatory power. I would argue that while the NSF's definition sounds universal and common sense, it is portraying science literacy in terms of a 'deficit model'. Bauer and Gaskell (1999) describe this model:

> Gaps and deficits are analysed as ignorance or misunderstandings among the lay public, and go hand in hand with calls for more media activity and media control by the scientific elites. This is strategic communication, and its knowledge interest is the efficient and effective control over the audience in line with the objectives of the scientific establishment. (p.166)

Science literacy in the deficit model is a top-down, not interactive, tool to ensure that science and its products are perceived as intrinsic goods, well worth spending tax dollars on (see Blakemore's comments, Section 2.4.2.1). The assumption of the deficit model is 'to know science is to like it'. This is not necessarily the case. The NSF 2000 Science and Engineering Indicators found that while US data showed a positive correlation between measures of science literacy and positive attitudes to science, there was a much weaker correlation in other countries (p.18).

Other writers subscribe to the 'constructivist' model of communication i.e. meaning is mutually constructed by participants in dialogue. Meaning is not fixed once and for all, it is stabilised in acts of trust depending on shared conventions, and is open to change. In this model, context becomes significant in predicting attitudes. Bauer, Petkova and Boyadjieva (2000) argue that the relationship between knowledge and attitudes to science is controversial and contradictory (p.42). Their study found that Bulgarian and British people had very different attitudes to science, more dependent on their political context than their knowledge of science data and methods. Gaskell et al. (1999) looked at public perceptions of biotechnology in Europe and the US. They found that science literacy and positive media coverage did not correlate with positive attitudes. When statistically controlling for level of knowledge, US people were more positive about science and its products (Gaskell, Bauer, Durant, & Allum, 1999). Australian surveys show that attitudes to science vary according to context – in this instance how involved people are in decision-making on scientific issues. Generally, people perceive science is essentially good as it benefits their every day lives. Once they are called on to make policy decisions about science, they perceive it is a two-edged sword, with costs as well as benefits (Fensham et al., 2000).

The deficit model of knowledge and science literacy also informs the cognitivist hypothesis of attitudes that underlies survey construction for measuring attitudes. The analysis of survey instruments in Chapter Four shows how survey items are constructed with preconceptions about what people know, what they ought to know, and what is impossible for them to know so it is omitted.

2.6 Chapter summary

Scott Plous (1993) writes "Two general themes are apparent from research on attitudes toward the use of animals. Most survey respondents report firstly, that they are concerned about the well-being of animals, and secondly that they support the selective use of animals (particularly for food and research)." (Plous, 1993). The literature review in this chapter shows that the themes Plous outlines remain constant. In all the surveys people are against cruelty and for animal welfare while at the same time mostly being for animal use, particularly for food, though their attitudes as expressed in the surveys toward animals in research are very mixed. In the process of investigating the research questions outlined in Chapter One, Chapter Four elaborates reasons why attitudes to animals in research seem so ambivalent.

Chapter Three: Research Methodology

3.1 Introduction

This study discursively examines scientific discourse regarding people's attitudes to animals in science. Discourse analysis in social psychology studies actual words, whether they are written text or specific utterances, and the social context of those words. On a micro, textual level, discourse analysis identifies the rhetorical devices in language that construct a particular position and achieve particular effects. In doing so, dissonance can be located in the rhetorical context – that is, it is possible to detect those inconsistencies in discourse which are present but not noticed because argument is on a different issue (Billig, 1987). On a macro, contextual level, meaning is not simply inherent in the text, it is generated by the context of social action within which the text is produced. Billig (1995) argues that "meanings and collective identities are constructed in the course of social action" (p.64).

But why not do a survey directly of the social scientists and discover their attitudes to animals through the survey instrument? The problem with doing a survey is that it takes for granted that there are such entities as attitudes. Discursive psychologists criticise the very notion of an 'attitude'. Billig (1995) writes, "Typically, social psychologists have not treated "attitudes" as being essentially discursive phenomena. They have often seen "attitude statements" as the outward expression of more basic, internal, mental or emotional states, which are assumed to be essentially non-linguistic" (p.67). Potter and Wetherell (1987) describe various problems with the idea of mapping attitudes with survey instruments. They argue "The crucial assumption of attitude researchers is that there is something enduring within people which the scale is measuring – the attitude" (p.45). The assumption of attitude researchers is that when people describe an attitude, they are locating a stable 'object of thought' on a 'dimension of judgement' (Potter, 1987, p.43). The problem with this, they argue, is that with different purposes or different contexts a very different 'attitude' may be expressed. They write:

> Consistency and inconsistency are highly negotiable occasioned phenomena... On some occasions some variations will be seen as inconsistent, on other occasions the same variations will be seen as sensible and rational after all... [C]onsistency and inconsistency are variable states themselves and one of the things which interests the

> discourse analyst is how they are used, variably, as argumentative or rhetorical strategies" (Potter & Wetherell, 1987)

Attitude researchers comment on inconsistencies in people's attitudes about animals (Braithwaite & Braithwaite, 1982; Herzog, 1996; Hills, 1994; Nicoll & Russell, 1990; Paul, 1995; Pifer et al., 1994; Plous, 1991, 1993, 1998; Rowan, 1995; Takooshian, 1988). Paul (1995) describes

> an interesting phenomenon in the animal rights debate... There is clearly a discrepancy between public concern about animal experiments (50% opposed [them] in a recent British poll – Jacobs and Worcester 1990) and public tolerance of meat production (only 3-4% vegetarianism – 'Attitudes to Diet and Health', 1989; Gallup, 1990) (p.7).

Scientists also describe the phenomenon in terms of inconsistent attitudes. Blakemore (1993), a neurophysiologist, describes what he sees as inconsistencies in people's reported attitudes in a 1990 Gallup/*Daily Telegraph* poll:

> 38% of those replying [to the question 'Do you refuse, on principle, to buy goods which have been tested on animals or that contain animal products?'] (49% of women) said "Yes" to this question. Half of all British women seem to think that they are living perfectly normal lives without depending at all on animal products or animal testing. No meat, no leather, no milk, no wool... It is surely significant that, in the same opinion poll, 68% admitted that they were only "slightly knowledgeable" or just plain "baffled" about science and technology (pp.218-219).

Both scientists and attitude researchers believe influence and ignorance are involved in creating the apparent phenomenon of inconsistency. The schema is: the animal rights movement has influenced the mass media that in turn has influenced the public to give them the idea that animals in science have the right not to be used, and that animal use in science is unnecessary. The public are ignorant about science, and about the animal origins of many products they consume, and it is their ignorance that leads to their inconsistent attitudes. This schema relies on the notion of inconsistent attitudes and the deficit model described earlier. Discourse analysis, as seen in Chapter Four, throws some light on cognitivist hypotheses of inconsistency and attitudes.

Billig identifies a major difficulty with what he calls 'cognitivist' psychology. It attempts to discover the 'attitudinal frameworks' that are presumed to be possessed by the members of a particular social movement:

> By analysing questionnaire responses from members and from a comparison group of nonmembers, the psychologist might produce a model of the "cognitive framework" of the "typical member". The framework might claim to illustrate how the typical member is likely to process incoming information. For instance, the model might predict that there will be a self-fulfilling bias in the interpretation of information: messages from movement leaders will be interpreted to confirm the belief system and its schemata, while the schemata will be employed to reject potentially disconfirming messages from opponents. Such a diagram of the hypothesized "belief system" will be essentially static: its categorical components will be treated as existing entities, that guide individual members' actions, thoughts and categorizing of incoming information. *Above all, such a diagram will not show how the elements of meaning used by members in their utterances and thoughts have themselves been socially constructed, and how these elements are themselves frequently matters for social contestation* [my italics]... In short, such a model of cognitive schemata will take for granted many of the processes that ... should be studied directly by analysts of social movements" (Billig, 1995)

Marshall and Raabe (1993) consider also that an unquestioned assumption of traditional attitude studies is that "there is some enduring entity within individuals that can be measured" (p.36). If there is consistency in what is measured, the assumptions, process and outcomes are seen as valid. Discourse analysis doesn't make the initial assumption about internal states. It concentrates on "regularities [or otherwise] in the linguistic resources used by participants. Consistency at the level of discourse is then viewed as a product of the function to which the discourse is put" (p.36). Moreover, "some ways of describing, making sense of, certain issues are so familiar, so 'obvious' that they appear to be 'common sense'. The fact that they are a construction, one particular version, is obscured" (Marshall & Raabe, 1993).

Therefore, the question of whether a person's description of their mental state matches their mental state is irrelevant in discourse analysis. It instead shows how attitude accounts are constructed, what functions or purposes they achieve and when they are used (Potter & Wetherell, 1987). Potter and Wetherell (1987) argue that when people fill in an attitude scale, their responses should not be thought of as throwing light on some internal attitude 'structure'. From their point of view "[t]he descriptive accuracy of discourse and its adequacy as a map or chart of private, subjective, mental experience is [a] non-issue" (p.179). Instead, the responses should

be thought of as specific linguistic formulations that are dependent on specific contexts (pp.178-179).

3.2 Research method and design

Discourse analysis has straightforward subject matter: what is actually said or written i.e. discourse. As described above, no prior psychological schema or 'cognitive construct' is hypothesised, and therefore no correlation between internal and external states is sought. Analysis of discourse however, is somewhat complex. Dwight Atkinson argues that rhetorical analysis requires:

1) an eclectic borrowing of concepts and techniques from a broad range of fields
2) knowledge of the text-producing communities and their social contexts
3) interpretation, i.e. a capacity to 'read off' important aspects of the surrounding context from the text itself
4) bottom-up, or inductive, type of analysis – analytical categories are emergent
5) operation at the level of genre (Atkinson, 1999)

Atkinson's points are a useful checklist, and they are discussed now in the order listed above. First, I have used the writing of discourse analysts from the social psychology field to guide my analysis. Their sources are indeed eclectic, ranging from linguistics to French structuralists to the Greek rhetoricians, but the scope of this study does not require familiarity with such sources. Second, the 'text-producing community' in my study is that of social psychologists who study attitudes of people to animals in general and in research. Most of the psychologists are North American and the others are Australian and British. Their social context, broadly speaking, is that all are Anglophone, working within universities, publishing in peer reviewed journals and have an intellectual operating framework of empirical science. They can all be described as 'constructivist' social psychologists who theorise that actual utterances and actions spring from and can be understood in terms of hypothetical, mental or cognitive structures. Third, their texts refer to the radical social milieu of animal rights activism. Fourth, analytical categories did emerge from the analysis, rather than being *a priori* questions.

The fifth point about genre is important because it puts useful boundaries on the study. Genre is generally thought of in relation to art or literature, but it simply means 'kind' or 'style'. The style of writing in this instance is very specific: that of research papers in social psychology. The rules for research writing are strict in terms of content and style. Within the rules, there are significant variations. For instance, the survey instruments to measure attitudes use specific word constructions, but they also have crucial omissions. As Billig says, "An everyday ideology is not characterised only by the topics that are discussed and argued about. It will also be characterised by silences. To argue on one theme means to be silent on others." (Billig, 1995)

The actual mechanics of the analysis involve identifying what Potter and Wetherell (1987) call an 'interpretative repertoire'. The repertoire is "a lexicon or register of terms and metaphors drawn upon to characterise and evaluate actions and events" (Potter & Wetherell, 1987). The lexicon is developed by word counts, analysing grammatical constructions and any figures of speech used.

The analysis includes survey instruments that are carefully constructed textual items in which researchers have attempted to eliminate bias. The attitude researchers intend each item in the survey to be clearly understood, and use descriptive words and phrases such as "animal suffering" and "Fundamental research (for no specific purpose)". These show a systematic lexicon and together with sentence construction reveal rhetorical devices and psychological and rhetorical inconsistencies. Rhetorical devices are strategic, van Tijk argues, by definition, because they "are used to enhance the effectiveness of the discourse and the communicative interaction", the goals specifically being " comprehension, acceptance of the discourse, and successfulness of the speech act" (van Tijk & Kintsch, 1983). 'Speech' can be generalised as verbal expression, spoken or written.

3.3 The sample

The subject matter for analysis includes primary sources of survey instruments to measure attitudes, secondary sources of popular books on the subject and a popular science magazine's electronic archive. The discourses of attitude research and a popular science magazine are chosen for the following reasons. First, social scientists try with survey instruments to directly ascertain what people's attitudes to animal experimentation are. Their concerns about science and about animals inform survey instrument construction, and a detailed analysis brings out what the concerns are. Second, as a double-check, the research questions are addressed in a different way through a relatively simple analysis of a popular science magazine, to see whether patterns emerged and if they were similar to or different from those in the fine-grained analysis of the attitude surveys.

I obtained approximately 30 Anglophone research papers that published data from surveys on attitudes to animals including their use in scientific research. A literature search for articles by social scientists doing surveys on attitudes to animals in scientific research, or animal use generally, was conducted using electronic databases including Psycinfo, Web of Science, Sociological Abstracts, Sociofile and the Internet itself. Key words used in various combinations were 'animal', 'research', 'attitudes', 'science', 'literacy', 'discourse' and various authors' names e.g. Plous, Herzog, Pifer and Takooshian, once key authors were identified. Various websites were also found including those for AWIC (Animal Welfare Information Centre), the American Foundation for Biomedical Research, UK Research Defence Society and HSUS (Humane Society United States). The sample was selected on the basis of its stated subject matter, namely attitudes to the use of animals in scientific research, hence it is a purposive, non-random sample. A random sample is not appropriate for this study.

The sample includes primary sources -- those journal articles that have published the actual survey instrument used to collect data – and secondary sources including books. There is also a content analysis of a popular science magazine, *New Scientist*. There are more surveys on attitudes to wildlife and nature generally, but my sample was restricted to public attitudes to the use of animals, particularly in research.

Detailed analysis was made of 11 survey instruments that were published or made available to me, though comment is made on other papers. Secondary sources that are digests or overviews of the subject of animals in research are included. I searched the *New Scientist* electronic archive to discover relative proportions of items on animal welfare and animal rights in science and in agriculture.

The discourse of a popular, broad-based science magazine has suitable characteristics with respect to animal rights advocacy and arguments. The subject appears in a forum with a wide range of high profile, public interest controversies in science that recognise that science products have potentially both positive and negative wider impacts. There are a number of such magazines, such as *Newton*, but I chose *New Scientist* for its frequency (weekly), level (intelligent non-technical), volume (big enough database) and brief (ratings driven science news). It also publishes letters from readers on controversial subjects. The subject of animal rights has featured in *New Scientist* in hundreds of articles, reviews and letters over the years.

New Scientist's coverage of animals in agriculture as well as science is necessary for the analysis. The analysis contrasts animal use in science and agriculture because contrast and relationship provide meaning. Agriculture is the biggest source of animals for human use, which is why I am using it as a contrast to science. If the related but different issues of 'animal rights' and 'animal welfare' are treated differently with respect to the two industries of science and agriculture it can give insight to what the imperatives are for the social construction of animals in scientific discourse.

New Scientist has reports on how findings from scientific research guide agricultural practice and animal husbandry, in particular breeding e.g. the recent technological developments of IVF, cloning and genetic modifications, and feedstocks e.g. the discoveries of meat meal feedstock contaminated with prions leading to BSE for cows and vCJD for humans and the development of antibiotic resistance because of antibiotic feed additives.

3.4 Limitations of the research methodology

The study concentrates on the discursive resources of text and images. In doing so it can give insight into unquestioned assumptions generated from the social milieu of the text. It can also account for inconsistencies in discourse that arise as a response to a situation rather than reflect an internal cognitive inconsistency. Therefore, more can be understood about influences on the authors, in this case the attitude researchers. Additionally, their collected data can be understood as participants' responses to the particular 'situations' each survey item describes.

However, discourse analysis does not consider that the concept of an internal psychological or cognitive structure or mechanism such as an attitude is relevant. Therefore, this study does not look at 'attitudes' as such and additionally does not do interviews asking the authors of the survey instruments what they might have meant with respect to their survey constructions. The advantage of discussing intentions in interviews with authors is that linguistic and rhetorical patterns – 'interpretative repertoires' as mentioned above -- may be revealed which may differ considerably from those demonstrated in the formal texts. However, the surveys as they stand are undertaken by respondents and it is effects of particular language constructions in surveys on readers which provide data for this study, as discussed in the following chapter.

The *New Scientist* database counting exercise also has limitations. The *New Scientist* search engine does not allow relatively complex search formulations, so it was not possible to search within subsets in order to assess the relative proportions of articles on agriculture or science mentioning animal rights or animal welfare. This is a limitation. A further limitation is that the vehicle is *New Scientist*, so one would expect a predominance of articles and letters about direct scientific use of animals. The limitation is addressed partially by using relative proportions of articles on given subjects concerned about either animal rights or animal welfare (search set results and relative proportions are provided in Appendices Ia and Ib).

Chapter Four: Analysis

4.1 Introduction

This chapter analyses scientific discourse including attitude research and news articles to tease out various questions with respect to the relationship between animal rights movement and scientific discourses. Do the survey instruments of attitude researchers have a bias, whatever it might be? Are respondents asked to define what they understand by the phrase 'animal rights'? Have the priorities of the animal rights movement influenced the attitude researchers or more fundamentally, in discourse analytic terms, are there features of an underlying "social matrix" (Fairclough, 1992, p.237) that are possibly generating common biases rather than one discourse influencing the other?

A measure of the priorities of the animal rights movement can be obtained by analysing their literature for representations of scientific use of animals. From the Nicoll and Russell study described in Chapter Two (Section 2.4.2.1) it seems that laboratory animals mattered much more than agricultural animals to animal rights activists in 1990. If Nicoll and Russell (1990) had taken their analysis further and looked at which animals featured in the animal rights literature in research, the concern-to-use ratio would be even more disproportionate. About 85% of all animals used by US scientists are mice and rats (Orlans, 1996, p.155; Rowan et al., 1995), yet pictures and experiment descriptions in animal rights literature will typically be of dogs, monkeys, cats and rabbits (Herzog, 1996).

Similarly, analysing scientific literature for representations of animal rights concerns can indicate if similar priorities are also evident in scientific discourse. This chapter has first an analysis of the discourse of *New Scientist* and second, a more complex, detailed analysis of the discourses of social science research on attitudes and secondary sources.

4.2 *New Scientist* database content analysis

As explained in Chapter Three, I did a content analysis of the *New Scientist* electronic archive, which has complete records of their published news items, book reviews and letters from March 1988. The analysis of discursive content is conceptually simple. Search sets containing terms for the industries of science and agriculture, then for particular animal names, are formed using the phrases 'animal rights' and 'animal welfare'. This yields percentages of items containing those terms, which can be ranked (see Tables 1 and 2 below). The point of the exercise is to discover if there are any patterns that may illuminate whether the related but different issues of 'animal rights' and 'animal welfare' are treated differently with respect to the two industries of science and agriculture. No detailed examination of article content was made.

The total number of articles found containing science industry terms in the *New Scientist* archive was 23,036; for agriculture terms the total was 2,765 (i.e. about 1/10 the number for science terms); for '*animal rights*' was 185; for '*animal welfare*' was 192 and for ('*animal rights*' or '*animal welfare*') was 337. For the science industry, the terms '*science*', '*research*' and '*laboratory*' were used. For agriculture, the terms '*agriculture*', '*farm*' and '*farming*' were used. Phrases including the word '*animal*' were used to narrow the search, namely: *'animal research'*, *'animal experiments'* and '*laboratory animals*'; and equivalent terms for farm animals, namely '*animal farming*', '*animal husbandry*' and '*farm animals*'. This is summarised in Table 1. I also did a search on specific animal names (see Table 2 below).

Searches found articles containing all specified terms, but they were not necessarily on the subject comprised by the search terms. For example, the contents of the eight items in the search set {*'animal rights'* and *'farm animals'*} include five about science, two on farm animals and one on animal welfare and legislation. Only one article in this selection has the subject of stress for farm animals. The search set {*'animal welfare'* and *'animal husbandry'*} yielding a total of eight items has six on farm animals, two on science. This gives an early clue to the database content: in summary, science animals are associated with rights, farm animals are associated with welfare but not with rights.

4.2.1 Table 1: Search sets for 'animal rights' and 'animal welfare' with respect to science and agriculture

Industry terms	Number of articles found	'animal rights' rank order*	'animal welfare' rank order*
'animal experiments' & *'animal research'* & *'laboratory animals'* ♥	10	1	2
'animal research'	75	2	3
'animal experiments'	177	3	6
'laboratory animals'	125	4	5
'animal husbandry' and 'farm animals'	7	5	1
'animal husbandry'	38	6	4
farm	778	7	8
science and *research* and *laboratory*	1354	8	9
farming and farm and agriculture	103	9	7

Notes: ♥ science terms in italics, to more easily distinguish them from agriculture terms
* Numbers in search sets to obtain proportions for ranking are provided in Appendix Ia.

Table 1 is arranged so that the total number of articles found for each search set is given first. The following columns rank search sets containing the terms 'animal rights' or 'animal welfare' from highest proportion (value 1) to lowest proportion (9). Numbers in search sets and the relative proportions from which the ranking is derived are given in Appendix Ia.

It can be seen that phrases describing animals in science with respect to animal rights have the highest proportions concerned with animal rights. Their welfare has less weighting though it is still relatively high. Phrases describing animals in agriculture have lower proportions concerned with rights and relatively high proportions concerned with welfare. General industry terms for science and agriculture have mostly very small proportions mentioning either rights or welfare of animals, though agriculture has the highest proportion concerned with welfare of animals.

Table 1 shows that there is a trend for the concept of 'animal rights' to be strongly associated with animal use in science, while consideration of 'rights' for farm animals is much less in evidence. Both topics of animal rights and animal welfare achieve high prominence in the science industry, which is respectively either a reflection of the intensity of the animal protection lobby's attack on scientists, or a credit to scientists as people who care about their animals' welfare, or both. Welfare of animals in science and in agriculture is of equal, relatively high concern, suggesting that people (in the *New Scientist* context) acknowledge that animals require care independent of industry context. Rights of farm animals, however, are virtually a non-subject.

In discourse analytic terms, the absence of concern for farm animal rights "is as important in providing meaning as what is present" (Potter, 1987, p.28). The meaning of a farm animal is different from the meaning of a research animal in terms of 'rights'. There is little or no discussion of rights for farm animals. There are effects of being silent on the subject of farm animal rights. First, the tacit existence of a hierarchy in which science animals have higher status than farm animals by virtue of having rights is glossed over. Second, farm animals can be treated in a way which is not consistent with them having rights and a relatively high status, for example, using them for food.

Further analysis also shows a hierarchy of concern for animals that people usually do not elaborate. Table 2 below sets out the rankings for a variety of specific animals and animal categories such as zoo, wildlife, livestock, laboratory animals, etc. for the respective categories of animal rights and animal welfare. The total number of records containing a mention of each type of animal is given in Appendix Ib to enable an estimate of relative proportions of concern.

4.2.2 Table 2: Ranking of species for animal rights and animal welfare

Animal species	Number of articles containing the animal name	'animal rights' rank order*	'animal welfare' rank order*
primate	367	1	3
cat	485	2	10
rabbit	269	3	1
dog	579	4	4
chimp	391	5	5
rodent	237	6	6
pig	675	7	11
chicken	227	8	2
rat	893	9	9
cow	916	10	7
sheep	775	11	8
bird	1842	12	12
Generic category of animal			
zoo animal	18	1	1
laboratory animal	125	2	2
farm animal	114	3	3
pet	197	4	4
wildlife	1257	5	6
reptile	291	6	7
livestock	348	7	5
invertebrate	240	8	8

Note: *Numbers for search sets that yield relative proportions for rankings are in Appendix Ib. Categories are ranked from highest proportion (1) to lowest proportion (12, 8).

It can be seen from Table 2 that there is a trend to privilege some animals over others in terms of rights and welfare. Laboratory animals, companion animals and primates are privileged in terms of human concern about both rights and welfare. Reptiles and invertebrates consistently obtain little or no concern. Farm animals generally fall lower on the 'rights' ranking, and higher on the 'welfare' ranking.

The *New Scientist* rankings suggest that there is a continuum of concern that has parts left out, and the parts, both present and absent, are weighted differently. The rank order is different for welfare than for rights, the chief difference being that agricultural animals are

rank ordered higher for welfare than for rights. The rank order differences raise the issue of whether giving an animal priority in terms of welfare in some way excludes that animal from having rights. It is arguable that concern for welfare and for rights provide an index for utilitarian values: the more useful the animal, the less rights it is allowed or considered to have. But concern for rights could be additionally an index for affect. If we eat animals, we do not feel for them or empathise with them and therefore they are not entitled to rights. Animals for our consumption are food first, sentient creatures second, and they are not recognised as belonging to the world of animals with rights to the same degree as animals in scientific research.

4.2.3 Hierarchy of concern in social science literature

My sample of social science literature also shows, overall, a distinct hierarchy of concern for animals. The surveys do not distinguish animal welfare and animal rights. Several attitude surveys note a continuum of concern for animals, in general rating companion animals such as dogs and cats at the top, then primates, then rodents, birds and finally reptiles (Braithwaite & Braithwaite, 1982; Driscoll, 1992; Herzog, 1996; Herzog, Dinoff, & Page, 1997; Paul, 1995; Plous, 1996a, 1996b; Plous & Herzog, 1999). Invertebrates are not usually referred to in the surveys. Farm animals are referred to less often than invertebrates. For example, in their survey of members of International Animal Care and Use Committee (IACUC) and American Psychological Association (APA) Plous and Herzog (1999) ask what animals should be covered by the Animal Welfare Act including farm animals as a category. When they reported the results of their study in the journal *Science* they left farm animals out (Plous & Herzog, 2000), perhaps because the survey showed that animal researchers were statistically significantly more reluctant than other respondents to include farm animals under the AWA (Plous & Herzog, 1999, p.40).

4.2.4 How one animal is shifting status: the pig

Herzog's (1996) survey of people's perceptions of animal consciousness mentions 18 different animals. The order of belief in animal consciousness and intelligence shown by the 169 participants to the animals, from high to low is: typical companion animals, cetaceans, primates, one farm animal (the pig), rodents, bats, birds, fish, reptiles,

invertebrates (pp.18-19). Herzog describes the ranking as "consistent with phylogenetic based-logic" (p.19). He sees the ranking as a "moral phylogeny", indexing creatures according to how much we think they suffer pain and therefore to what degree they are entitled to 'rights', which are discussed but not defined. However, typical food animals are mostly left out of the group of animals Herzog chose for his respondents to rank. Why did Herzog include the pig? He writes:

> In some cases, our perceptions of species are related to the categories in which we place them... Scientists are becoming savvy to these distinctions. In our culture, pigs are perceived as farm animals – that is, renewable resources... [M]ost people do not object to raising pigs in concrete bunkers to satisfy consumer demand for barbecue and bacon. It is a small step from hog farm to laboratory, and it is no accident that the pig is becoming the animal of choice for many scientists seeking an alternative to dogs as large-animal research models" (Herzog, 1996, p.18).

In the scientific context the pig is made 'visible' and of higher status, as an intelligent animal with feelings, rather than remaining 'invisible' and of low status, as a "renewable resource" in the farm context. For example, in her book on animal experimentation Day (2000) has four pictures of research animals, one of which is a pig (p.79). The other animals pictured are a dog, a monkey and a mouse. As can be seen from the *New Scientist* data in Table 2 above, the pig tops the farm animals ranking in the Rights column.

In his article, Herzog discusses the "glaring inconsistencies" of the U.S. Animal Welfare Act where some species are defined as animals and others are not, but does not mention the pig in this context. It is not clear if the pig is included in Herzog's survey because of its scientific or farm categorisation, or because of its interesting ambiguity of status as it shifts categories.

4.3 Discourse analysis of attitude surveys

The following analysis of various survey instruments specifically studies sentence construction, the words and phrasing used, their frequency, what choices are (and are not) available for respondents because of the inherent nature of a survey instrument and rhetorical effects of the preceding features. Such analysis enables at least a partial answer to the questions: are animals in science socially constructed differently from other types of animal use? If so, how? Reasons for a different social construction and meaning become

elaborated through the analysis. The analysis is divided into segments with main themes. However, more than one theme often appears in each survey analysis.

4.3.1 Braithwaite and Braithwaite survey: example of 'dissociation' through different treatments of types of animal use

Braithwaite and Braithwaite (1982) made a general study of attitudes to animal suffering. They used a survey instrument of 74 items describing various domains of animal use including the harming of animals for entertainment, food, ornamentation or to increase knowledge (see Appendix II for a copy of the survey instrument). The survey was completed by 302 university students.

When the questionnaire is broken down by domain, there are 21 items referring to research (28%) and 13 referring to food or its production (18%). In relation either to actual usage of animals or to the notion of equity, there is a disproportionate emphasis on animals in research.

Table 4.3.1.1: Science and Food items from the Braithwaites' survey

Science items
Killing toads painlessly in testing a new drug before it is used on humans
Killing mice painlessly in testing a new drug before it is used on humans
Killing monkeys painlessly in testing a new drug before it is used on humans
Killing dogs painlessly in testing a new drug before it is used on humans
Killing mice painlessly for non-medical research
Killing toads painlessly for non-medical research
Killing toads painfully in testing a new drug before it is used on humans
Killing mice painfully in testing a new drug before it is used on humans
Sending monkeys up in space shots so that they die in outer space
Conducting painful experiments with toads to test whether new eye cosmetics would sting the eyes of humans
Killing monkeys painlessly for non-medical research
Conducting painful experiments with mice to test whether new eye cosmetics would sting the eyes of humans
Killing mice painfully for non-medical research
Killing monkeys painfully in testing a new drug before it is used on humans
Killing dogs painlessly for non-medical research
Killing dogs painfully in testing a new drug before it is used on humans
Conducting painful experiments with monkeys to test whether new eye cosmetics would sting the eyes of humans
Killing toads painfully for non-medical research
Conducting painful experiments with dogs to test whether new eye cosmetics would sting the eyes of humans
Killing monkeys painfully for non-medical research
Killing dogs painfully for non-medical research

Table 4.3.1.1: Science and Food items from the Braithwaites' survey
Food items
The law should force abattoirs to kill animals painlessly even when the animals could be killed more cheaply and efficiently by a painful method
There is nothing wrong with eating meat if eating meat is the only food available for human survival
Commercial fishing with nets
Eating meat from an abattoir which uses humane methods of killing
I would be prepared to pay a higher price for meat to cover the cost of more humane methods of rearing animals for slaughter
Eating meat from an abattoir which uses inhumane methods of killing
Eating pate produced by the force-feeding of geese
It is wrong to eat meat when there is an alternative satisfactory diet available
It is wrong to eat meat under any circumstances
Force-feeding geese to make their livers swell up to produce pate for restaurants
Keeping laying chickens in battery cages which are so small that they cannot spread their wings
A person killing his pet dog and then eating it for food
The use of inhumane killing methods at an abattoir

The science items uniformly describe animal use in terms of death or pain. 16 of the 21 science items begin with the word "Killing", e.g. "Killing mice painlessly for non-medical research". Four other items include the word "painful". One statement "Sending monkeys up in space shots so that they die in outer space" seems to imply that the monkeys are simply sent into space to die. The purpose of the research if it is not for testing a drug or cosmetic is not mentioned.

The food items are treated somewhat differently. Only six of the 13 food statements include the words "killing" or "slaughter", though one refers to laying hens. Six of the 13 statements mention animals, and four of those six mention particular animals: hens, geese and a dog. Three of the 13 statements have terms that refer to both animals and killing. Two of the 13 statements have terms that refer to both meat and animals. One statement "A person killing his pet dog and eating it for food" does include all terms necessary to associate killing and eating with a specific animal. But this particular statement seems designed to arouse emotions around the affection our society usually has for pets. The 13 food items name only two farm animal, both birds – geese and hens. By contrast, the 21 science research items name four animals: toads, mice, monkeys and dogs. No statement in the Braithwaites' survey reminds us that specific animals – sheep, cows, pigs, etc – customarily have to be killed in order to become the food we know as "meat".

The Braithwaites' survey treats the categories of "Food" and "Increasing knowledge" very differently. The categories themselves have different affect. Though both are end

products, "food" is concrete, immediate and is associated with necessity, "increasing knowledge" is abstract, distant and seems to be associated with irrelevance: the tacit response seems to be, 'isn't there already too much information out there?' "Solving problems" or "Finding answers to questions" has affect different from "Increasing knowledge".

There are several rhetorical effects of the Braithwaites' survey item construction. First, not mentioning valuable results of research (e.g. developing polio vaccine) eliminates a cost-benefit context for the use of the animals. Second, the effect of using specific animal names is to make it easier to imagine the animals. The statements describing research processes create painful, precise images focussed on the animal rather than the outcome of the research. By contrast, items describing meat production are abstract, mostly not identifying an animal, mentioning the fact that animals are the source of meat, or providing descriptions of the manner of their death. Third, the description of science as always causing pain or death to animals is incorrect (see Section 4.3.3 for more detailed discussion on this issue), and conveys a negative impression of science as routinely causing pain or death to animals.

The Braithwaites' different treatment of science and food is an example of what Plous (1993) calls dissociative activity. Plous (1993) describes "a dissociation between the use of animals and the infliction of pain", based on structural variables such as "the language surrounding animal use, the physical appearance of animal products, the remoteness of animal industries, and the way people are socialised to think about animals" (pp.14-15).

4.3.2 Driscoll survey: experimental animals are given primacy thereby promoting identification with them

Driscoll (1992) did a survey of attitudes to animal use with a sample of 495 of the general public. In her introduction Driscoll says that the use of animals in research "has become one of the most controversial issues" of the animal rights movement (p.32). Beyond this comment Driscoll does not justify the proportions or contents of the domains of animal use in her questionnaire (see Appendix IIIa for a copy of Driscoll's survey instrument).

The questionnaire breakdown is: 11 items on medical research, six on behavioural research, six on product-testing research, six on educational uses of animals, three on the use of animals to make luxury garments, and three on animals as pests (p.33). There are none for agricultural uses of animals including for food and garments. 23 in total i.e. two thirds of her questionnaire of 35 items are on animal use in research, which is coincidentally a proportion identical to that in animal rights movement literature (Nicoll & Russell, 1990).

Driscoll's results show a continuum of concern similar to that described above in Herzog's (1996) survey. Her respondents found the animal use described in 18 of the 35 statements unacceptable. (See Appendix IIIb for items ranked by acceptability). Of that 18, 12 refer to basic or applied research and product testing, featuring cats (2 items), monkeys (2), dogs (1), mice (3), sparrows (1), frogs (1), fish (1). The acceptable research statements feature monkeys (1 item), dogs (1), rats (4), frogs (2), fish (1), cockroaches (2) and leeches (1). That is, companion animals and primates obtain most concern, cold-blooded animals and invertebrates obtain least concern and farm animals are left out.

Driscoll's summary table of means for acceptability of various activities shows that people think killing animals for luxury garments and product-testing research is unacceptable and using animals for medical and behavioural research and education is marginally acceptable. The mean for pest killing shows people think the behaviour described is unacceptable. But two of the three statements about animals as 'pests' have a component of unnecessary violence ("A person shoots and kills a cat that is yowling outside his window at night" and "A person kills a non-poisonous snake in his garden").

All of the statements refer to specific animals in similar ways. The animal itself is generally either the subject of the sentence e.g. "Cats are fed a new household cleaner to find out how poisonous it is", or the main emphasis e.g. "A person purchases a coat made from the skins of cheetahs, an endangered species".

Processes of treatment of the animals are put into the immediate context of the animal, e.g. "A researcher burns the skin of frogs to study the effects of various treatments on burns. Anesthetic is used for the original burns but not afterwards". Outcomes or

applications e.g. burn treatment, though specified, are not put into an immediate human context. There is no statement with a contextualised outcome and an abstracted process, such as "A patient with third degree burns is treated with an artificial skin developed using frogs in burn research and subsequent scarring is greatly reduced".

The statements describing basic research refer to specific outcomes but not to their wider context e.g. "A researcher raises baby monkeys in isolation to find out how this will affect later behavior as parents". The word "baby" prompts an immediate, strong affective response and the phrase "in isolation" prompts us to think that this baby has been cruelly made into a sad little orphan. Driscoll is presumably referring to Harry Harlow's classic monkey experiments that shifted notions of kinship, bonding, affection and love into the scientific realm, and brought light to bear on the difficult and unpleasant question of the relationships between human children and abusive parents (Blum, 1994). But the reader is given no clue of the general significance of doing such research.

The rhetorical effect of Driscoll's statement structure is that the experimental animal and its feelings are given primacy. This enables identification with the animal, and an omission of the wider, human context in which the animal research takes place. All items for research procedures describe unpleasant, painful, invasive (poisoning, electric shocks, burns, social isolation) or fatal treatment of animals. The non-science items usually only refer to animal death, either directly ("shoots a cat", "dead cats") or indirectly (e.g. "skins of cheetahs"). Science is constructed as cruel, the rhetorical effect of which is emphasise the animal's suffering.

Only 5% of Driscoll's sample reported being vegetarian, so most people are clearly not against using animals as such. Driscoll's results indirectly suggest that attitudes to animals are predicated not on whether they should be used at all (a rights issue), but what they should be used for (pragmatic, instrumental value) and how they should be treated (a welfare issue).

4.3.3 Herzog and Bowd surveys: different construction of animals in science and agriculture, different construction of science and agriculture

This section analyses three surveys, by Herzog, Dinoff and Page (1997), Mathew and Herzog (1997) and Bowd (1984). It shows that animals in science receive different treatment from animals in agriculture and that science and agriculture are also constructed differently.

Herzog, Dinoff and Page (1997) did a survey of an animal rights email network, Animal Rights-Talk. They mention two categories "regarding the ethics of particular uses of non-human species (e.g. meat consumption, biomedical research with animal subjects)" (Herzog et al., 1997, p.399). From the outset the framework for priorities is rhetorically structured. First, animals in agriculture are de-differentiated, being called 'meat' rather than 'animals'. The focus is off animals in agriculture and on animals in research. Second, instead of the ultimate beneficiaries of the research, scientists are portrayed as the principal consumers of animals in experiments. The agricultural/food analogy would be to focus on farmers or butchers instead of the endpoint consumers.

Consistent with this, of the sixteen animal species named in the survey, fifteen are companion and wild animals. One farm animal only is named – chickens (Herzog et al., 1997). In this survey animals in agriculture are not seen as an issue for animal rights supporters. The debate on the use of animals in scientific research is given primacy, perhaps because scientists, attacked as they are, feel they have a mission to educate, so they write to animal rights networks defending animal research. The farmers are not attacked, and they do not write. Whatever the reason, Herzog et al. do not comment either on the omission of agricultural animals, or the foregrounding of research animals. The animal rights movement priorities are accepted without comment and there is no definition of the term 'rights'.

Mathew and Herzog developed an Animal Attitude Scale of twenty items with four main content domains (Mathews & Herzog, 1997) (See Appendix IV for a copy of the survey instrument). Five items are on science, testing and education; four on food; four on recreational use of animals; and the remaining seven to miscellaneous issues of fur,

wildlife, pets and animal welfare. The proportion of domains of animal use is roughly equitable, though doesn't reflect actual use.

Various descriptive words are used, including 'unnecessary', 'cruel', 'morally wrong', 'sentimental'. The only statement that has both the words 'unnecessary' and 'cruel' refers to scientific research: "Much of the scientific research done with animals is unnecessary and cruel" (Item 7). Another statement in support of scientific research uses a double negative construction: "I do not think that there is anything wrong with using animals in medical research" (Item 2). The treatment is different for food e.g. "I think it is perfectly acceptable for cattle and hogs to be raised for human consumption" (Item 8). The description of use has quite different affect. Animals in science are 'used' and animals in agriculture are 'raised'. The implication is that animals are treated as inanimate tools by scientists whereas farm animals have lives, are reared and cared for by farmers.

Alan Bowd developed a scale of attitudes toward the treatment of animals (Bowd, 1984a) (see Appendix V). It has thirty items in four content domains: companion animals (3), agriculture including vegetarian preferences (8), science (8), wildlife (10) and one on whether humans are the only deliberately cruel animal. This, like Herzog and Mathew's scale, has approximately equal proportions, but again, does not reflect actual usage of animals.

	Table 4.3.3.1 Agriculture and Science items from Bowd's SATA (see Appendix V)
	Agriculture Items
1	As long as adequate food, ventilation and light are provided there is nothing cruel about battery hen farming.
2	Transport of food animals, such as cattle or sheep, by road and rail involves little or no discomfort and cruelty.
3	Animals killed for food should be slaughtered humanely under strictly controlled conditions.
4	Intensive battery egg production is cruel and unnatural.
5	The export of live food animals such as sheep should be prohibited because it is extremely inhumane
6	A wholly vegetarian diet is unnatural for people.
7	It is morally wrong for people to kill animals for food when alternative vegetarian diets are available.
8	Modern farming is a business, and efficient production methods should be the first priority of farmers.

	Science Items
1	Painful scientific research using animals which has no practical results should be abolished.
2	In scientific research the discovery of knowledge is paramount, even if animal suffering is involved in the process.
3	Scientists should use humane alternatives to painful experiments wherever possible.
4	Dissections and laboratory demonstrations on animals are a valuable way of teaching science.
5	Although some scientific experiments on animals may seem trivial or repetitive they should nevertheless be permitted.
6	Films or videotapes should be used instead of live animals for teaching purposes in science.
7	Experiments on animals are acceptable provided suffering is eliminated by the use of analgesics (pain killers) or anesthetics.
8	Scientists themselves are best able to determine whether the pain inflicted in an experiment is necessary.

The description of animal experience is different for the science and agriculture items. Five of the eight science statements describe animal experimentation as painful for the animals, using the words 'pain', 'painful' and 'suffering'. While four of the eight agriculture statements mention the words 'cruel', 'cruelty' and 'inhumane', only two assert that agricultural practices are cruel or inhumane. None of the science statements name particular animals, whereas three of the agriculture statements do. Naming animals as mentioned previously makes it easier to imagine them. But the two agriculture statements describing killing animals for food do not name them.

The biggest difference between the science and agriculture statements arises through sentence structure. The science statements imply that scientific experiments *necessarily* cause suffering to animals e.g. item 28 "Experiments on animals are acceptable provided suffering is eliminated by the use of analgesics (pain killers) or anesthetics". Five of the science statements have descriptions implying that the scientific endeavour with respect to animal use is either unnecessary e.g. 'no practical benefit', 'trivial or repetitive', or needs justification e.g. 'necessary', 'acceptable' and 'of paramount importance'. The science statements imply that increasing knowledge causes animal suffering e.g. Item 7: "In scientific research the discovery of knowledge is paramount, even if animal suffering is involved in the process". The implication is essentially incorrect as the great majority of

animals used in research receive a single lethal injection of anaesthetic.[3] Only a small proportion of experiments involving animals have potential for the animals to experience significant pain or distress (Rowan, 1995, p.20). Bowd's survey items do not offer respondents the choice of challenging this incorrect assumption.

The agriculture statements imply that treatment of the animals is discretionary e.g. item 2 "As long as adequate food, ventilation and light are provided there is nothing cruel about battery hen farming". This translates as, 'understand the animal's needs and it can be given a pain-free life'. None of the farm statements question whether animals should be farmed, only how they should be treated. One of two vegetarian statements that Bowd has included in the farm animal content domain, item 27, says "It is morally wrong for people to kill animals for food when alternative vegetarian diets are available" which is a direct criticism of the *raison d'être* of the meat industry, but not of the general practice of farming animals.

The treatment of the industries of science and agriculture is also different. The outcomes of scientific research are never specified, whereas they are for agriculture. Science seems to be undertaken principally so animals can be used in painful ways, similar to the Braithwaites' item, "Sending monkeys up in space shots so that they die in outer space". The effect of specifying a process and omitting an outcome or context for the process is to foreground the animal's experience. As mentioned previously, five of the eight statements describing scientific research in Bowd's survey instrument portray the animals' experience as painful. The overall rhetorical effect is to create a misleading and negative portrayal of science.

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[3] Dr Simon Bain, Executive Officer of the Animal Experimentation Ethics Committee at the Australian National University (ANU), provided statistics of animal use at the ANU for 2000. 76.3% of the 118,843 animals used during the year are euthanased (given a lethal dose of anaesthetic) without prior manipulation. Of the remainder most underwent minor procedures such as blood sampling. 4.6% underwent surgical manipulations that may be associated with a degree of pain and stress. Such procedures have anaesthetics and analgesics (pain alleviators) provision. Of the 118,843 animals used last year 83,587 (70.33%) were rats and mice. Wildlife studies are the next biggest category.

4.3.4 *Plous, Takooshian and Furnham and Pinder surveys: construction of the 'suffering animal' in the science context; and negative construction of science*

Scott Plous provided me with a copy of the survey instrument he used to collect data in 1991 and again in 1996 from animal rights activists participating in a "March for the Animals" protest walk up to the White House (Plous, 1991, 1998) (see Appendix VI). The survey asks 15 questions, eight of which establish whether the respondents believe in animal rights (but it does not ask for or provide a definition), what behavioural practices they engage in with respect to avoiding animal use, and what their general priorities are for animal welfare and reduction of animal suffering in various areas of human use of animals. The remaining seven are about animal research. There are none on other uses of animals. The survey is intended to discover what respondents think about the use of animals in research and what they think of strategies for combating animal use. Implicit in the questions is the assumption that research always causes animal suffering, e.g. item 13 "In general, which kind of research causes more animal suffering – medical or psychological/behavioural?" The impression given is that the animals suffer while the benefits of the research remain unspecified.

There is also an emphasis on the need to do away with animal research e.g. item 11, where they are asked if they think break-ins to laboratories are effective or not in discouraging animal research. The rhetorical effect of the question structure is that the assumption 'animal research should be discouraged' becomes a given. Respondents have no opportunity in this question, or in the general survey structure, to offer an opinion which ignores the survey constraint. For example, other considerations are not referred to such as what happens to lab animals if removed by activists from laboratories, or the value of the research. The responses are constructed and constrained by the survey itself.

Harold Takooshian provided me with a copy of his survey instrument regarding the use of animals (see Appendix VII). It is described as being about "the use of animals in research

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An example of a physiological challenge is a substance used in mice that raises blood pressure. There is provision for all tumour models to be euthanased at the first signs of pain and/or distress.

and other settings" and it is mostly on animals in research. There are 24 items in total, one with a subset of 12 items, making a grand total of 35. Of the 35, there are five items on non-research use, namely hunting (1), caged animals, which could be labs, zoos or circuses (1), fur clothes (2) and meat (1). There are two items on animal rights and suffering, five items on science's role in society, 15 items regarding use of animals in scientific and biomedical research, training and testing, five demographic questions and two on opposition to and regulation of scientific research using animals. The survey asks if animals have inherent rights (item 5), but doesn't ask people to define or probe what they understand by rights for animals.

No animal names are given, but the phrases "living animals", " causing pain to animals", "animal suffering", "sacrifice of laboratory animals" and "welfare of animals" (items7-10) create the impression that whole, live animals necessarily and always suffer in the scientific setting. Terms describing basic scientific research are abstract: "scientific research", "biomedical science", "scientific inquiry", "scientific curiosity". It cannot be told from the phrases what discoveries basic animal science makes about physiology and how significant the discoveries are for understanding health and disease. By contrast, applications are specified: teaching surgery, veterinary research, and testing various products for domestic consumption e.g. food, drugs and cosmetics.

The wider ethical concern for the suffering of sick people that benefit from medical research is included in the survey, but the wording of statements emphasises affect for animals e.g. item 10, which creates doubt about the value of lab animal use: "Since many people are alive today due to findings of animal research, this *fully* justifies the sacrifice of laboratory animals" [my italics]. The adverb "fully" portrays the scientist in a defensive role. Lab animals are "sacrificed", with connotations of ritual and religious significance.

The statements designed to elicit the degree of faith in science (items 11-15) are constructed in a way that already casts doubt on the status of science. For example the statements, "there are areas where *even* science should not tread" and "it is the scientist's duty to study *even* the most controversial issues..." [my italics], imply through the use and position of the adverb 'even', that science has the arrogant belief that its power can and should solve any problem. The statements omit mention of the complex and extensive

procedures in place to assess and monitor a range of scientific enterprises such as animal research, genetic engineering, human experiments, etc.

Takooshian's survey is giving primacy to the animal in research by foregrounding its feelings and giving the reader the impression that animals necessarily suffer in science. It gives a negative weighting to basic science both through lack of adequate and correct information and the characterisation of its mission. Item construction creates the impression that testing products for their clinical use is more valuable than basic research. The survey also leaves non-research uses of animals such as food virtually out of consideration, the rhetorical effect of which is to create two classes of animal. Only one class, the research animal, is described in terms of suffering thereby deserving our consideration.

Furnham and Pinder (1990) did a survey of 250 Britons of an average age of 20 specifically to ascertain attitudes to animal experimentation (see Appendix VIII). It has 63 items with which the respondents agreed or disagreed on a seven point scale. 12 items have phrases referring to the experience of laboratory animals. 11 of the 12 refer to animal suffering, pain or death e.g. Item 4 "Because we can never be sure just how much animals do suffer in experiments, we should not use them in experiments", Item 27 "Although animal experimentation produces scientific information, it is not worth the suffering the animals must endure" and Item 54 "Painful experiments on animals should not be prevented because they can provide knowledge and relief from human suffering". The remaining one describes lab animals as having "an easier life than they would in the wild". The other items that do not have descriptions of animals' experience have neutral phrases such as 'animal experimentation' or 'animal research'. Furnham and Pinder's phrasing describes, nearly uniformly, animal experience in science as painful and has the implicit (and incorrect) assumption that animal suffering is a *necessary* consequence of scientific research. Its rhetorical effect may explain why most respondents disagreed with item 34: "More neglect, abuse and cruelty occurs to farm and pet animals than in research facilities". Rights for animals are mentioned, but no definition is given or asked for e.g. Item 7 "There are not many issues which make me as angry as the abuse of animal rights".

Purposes of the experimentation are referred to in 13 items. Six refer to abstract benefits with phrases such as "scientific information" (Item 27), "gather information" (Item 9), "valuable information" (Item 44), "produces great benefits" (Item 13). One item (no. 57) describes basic science as "Fundamental (for no specific purpose) research". Of the remaining seven, three refer to cosmetic (1) and drug (2) testing e.g. Item 3 "There is no justification for the use of animal experimentation in the testing of cosmetics". This does not characterise correctly that cosmetic testing is a health benefit, as sunscreens and moisturisers are defined as cosmetic products. Additionally there is the consideration, omitted from Furnham and Pinder's items, that untested products could damage people's health (which is why testing is mandatory).

The description of science is heavily weighted toward applications. Four of Furnham and Pinder's items refer to medical benefits and one to space programme and radiation experiments that "cannot be done without animals" (Item 59). Six of the seven statements refer directly to applied medical or health benefits. Statistics of actual animal use show that 0.1% of animals are used to test cosmetics, about 30-40% on drug discovery and biological products, and the rest on basic research (Rowan, 1995, p.20). Basic research is incorrectly described by Furnham and Pinder as being "for no specific purpose", but perhaps they mean "no specific application". For example, if a scientist is working on the exact chemistry and function of neurotransmitters, there is a specific purpose but no direct clinical application. However, such basic understanding paves the way for discovering the mechanisms of and ultimately therapies for a variety of neurological disorders such as depression, schizophrenia and Parkinson's disease. But the basic knowledge comes first. The survey researchers may be accommodating what they believe to be their respondents' lack of knowledge and only incidentally constructing and perpetuating misconceptions about science.

4.3.5 Pifer surveys: misinformation on types and use of animals in science

Pifer (1994) and Pifer et al. (1994) use one statement with which respondents agree or disagree on a five point scale, to discover attitudes to the use of animals in research for their international study. The statement has also been used by the National Science Board

(NSB) of the US since 1985 in their biennial survey of public attitudes to science (NSB, 2000).

> *Scientists should be allowed to do research that causes pain and injury to animals like dogs and chimpanzees if it produces new information about human health problems. Do you strongly agree, agree, disagree, or strongly disagree?*

Pifer (1996) uses the above statement and two others in her survey of young adults;

> *Continued research with animals will be necessary if we are to ever conquer diseases such as cancer, heart disease, and AIDS. Do you strongly agree etc.*
>
> *Most of the scientific research done with animals is unnecessary and cruel. Do you strongly agree etc.*

These statements misrepresent science, because first, as stated earlier the great majority of experiments do not involve pain or distress since the animals receive a single lethal injection. Second, Pifer's reference to dogs and chimpanzees misrepresents actual animal usage as 85-90% of animals used in research and testing are mice and rats (Rowan et al., 1995). Of the approximately twenty million animals used yearly in the US for experimentation, perhaps two dozen are chimpanzees (Blum, 1994). Rowan (1995) comments on the NSB survey, and argues that respondents' affective response to the animals is balanced by the affective appeal to human health problems (p.11). Even if Rowan is correct, that doesn't counterbalance the actual rhetorical effect of constructing science as predominantly causing pain to high status animals. Third, there is an appeal to applied benefits, presumably because it is believed that is what people can relate to, and omission of any characterisation of basic research. This misrepresents two facts: first, that perhaps 40% of all experimental animals are used in basic research (Rowan, 1995, p.20); second, that basic research underpins applied research. Professor David Curtis, an eminent Australian neurophysiologist, said on this subject:

> Without basic research, progress is difficult to make for two main reasons. First, the mechanisms of how things work – anything from the brain to ecology – can't be understood. Second, if we don't know how things work [from doing basic research], we don't know how to fix them when they go wrong. (Veitch, 2001, p.7)

4.3.6 Nibert survey: confusion on 'animal rights'

David Nibert (1994) explores the relationship between support of animal rights and attitudes to human social issues, but he doesn't ask what people think 'animal rights' are.

Nibert has one survey question relating to animal rights: "Some people say that animals have rights that people should respect. Would you agree or disagree?" Most of his respondents agreed that animals had rights, but it is unclear what they understood by the term. The rhetorical effects of not asking respondents to say what they think rights for animals entail are to blur the distinction between rights and welfare, and to obtain a much higher percentage of people supporting the notion of 'animal rights' when they actually mean 'animal welfare'.

4.3.7 1999 New Scientist MORI survey: ambiguities and variability

The 1999 *New Scientist* MORI survey asks the question, "On balance, do you agree or disagree that scientists should be allowed to conduct any experiments on live animals?" The House of Lords Select Committee Report (2000) on science and technology comments in detail on the *New Scientist* survey, and argues that this particular survey item is flawed by the use of the word "any". The report asks:

> Did those who said "Yes" take "any" in the broad sense of "any without limit"? In that case, they support a free-for-all in animal experimentation, an extreme position which most people would reject, including the Government. Or did they take "any" in the narrow sense of "some"? In this case, assent indicates ... [belief in] a much less extreme position that most people would support. (House of Lords, 2000)

If the survey items are ambiguous, it is not surprising that results are obtained which can be interpreted in different ways. However, the 1999 *New Scientist* survey is overall fruitful because it provides several different scenarios and different starting points, thus enabling participants to show considerable variability in their responses (see detailed discussion in Section 2.4.1).

4.4 Features in common of the attitude surveys

There are features in common of the surveys, summarised and discussed below.

4.4.1 Absence confers meaning

Researchers often leave some animals and domains of animal use, in particular agriculture, out of the survey instruments. Agricultural animals are 'invisible'. The surveys construct a hierarchy of high and low status animals, and survey respondents place animals on a continuum of concern consistent with the hierarchy. High status is conferred by the degree of domestic intimacy, perceived similarity to us[4], and involvement in high profile activity, namely contributing to the scientific endeavour. Low status or invisibility is conferred by the degree to which an animal is consumed by us and by our pets on a routine basis. The concern is not dictated purely by what the animal may experience.

4.4.2 Lack of definition for 'animal rights'

Rights for animals are often mentioned but survey participants are never asked to define what they understand by rights for animals. Mentioning 'rights' has several rhetorical effects. It constructs a moral dimension for animals in the participants' responses, positively weighting their consideration of the animal. It glosses over the absence of consideration for the moral issue of why animals are used in experimentation, not humans, which is explicitly formulated in the Nuremberg code and Helsinki accords because of the Nazi atrocities (Naquet, 1993). The lack of request for definition has the rhetorical effect of glossing over the real differences between considerations of rights and of welfare that in turn reduces the variability of people's responses. It increases the number of survey respondents willing to agree that animals have rights because they in fact support animal welfare. This confusion may account in part for why high numbers of people are recorded as supporting animal rights.

[4] The similarity can be either phylogenetic, as with non-human primates, or through capacities e.g. intelligence and affection. "Whales are intelligent, almost akin to humans" writes Kevin Toolis in an article on whaling (Toolis, 2001). Not as clever as we humans, but in a way which we can identify with, feel is 'kin' with us.

4.4.3 Negative weighting of science, difficulty of describing basic science and use of the deficit model

4.4.3.1 Negative weighting of science

Survey instruments tend to be negatively weighted toward science. The rhetorical strategies that achieve this are first, representation of science as necessarily causing pain to animals in the process of using them; second, decontextualisation and abstraction of the scientific endeavour; third, omission of the ethical purposes and legislative regulations governing the scientific endeavour. If surveys are said by researchers to be about general animal use, there is usually a disproportionately high science content, giving the incorrect impression that science is the principal user of animals. The cumulative effect of these rhetorical strategies is to create science as an important, high priority target for criticism.

4.4.3.2 Difficulty of describing basic science

Basic research is seldom described with specific examples; rather, science is characterised in terms of medical applications. There seems to be a belief that basic research is not easy to understand whereas applications have immediate relevance to people's every day lives. Rowan (1995) describes the difficulty of explaining basic research to people with a detailed example of research on sleep (using cats) of a scientist, John Orem, whose work was attacked and effectively stopped by animal rights activists.

> [Orem] noted that he found himself almost as upset by those defending his research as by the vandalizing of his research laboratory... [H]e was particularly disturbed that research advocates seemed to find it necessary to emphasize the potential "usefulness" of his work... While applied research could be judged by its utility, [Orem] argued that basic research should be judged simply on whether or not it produces new knowledge based on creative science, rigorous testing, and self-critical interpretation of data (Rowan et al., 1995)

The word "simply" gives an important clue to Orem's position. Knowledge is such an integral value to him that he can't easily imagine why other people do not understand that. How to begin explaining it? It is perceived as being easier to describe medical advances and so that is what happens, as can be seen in the surveys discussed in this chapter.

4.4.3.3 Deficit model of communication

The surveys are providing instances of the deficit model of communication. There is an implicit patronising of the public by trying to appeal to what it is believed they are familiar with. That is, explicit examples of applications believed to be relevant to most people's lives are employed in the surveys. Basic research description by contrast is vague, sometimes incorrect (e.g. Furnham and Pinder (1990) as discussed above) and sometimes omitted completely. The treatment of basic science in the surveys mostly fails to engage respondents' participation in understanding a complex and important concept.

Using stereotypes and clichés as a convenient shorthand is not necessarily an efficient method of communication. The effect of the simplification is to preconceive and accommodate to respondents' perceived ignorance. The rhetorical effect of such 'second guessing' is to inadvertently but effectively construct participants' responses. Therefore, misconceptions about scientific use of animals may be promoted and perpetuated by the surveys themselves.

4.4.4 Suppression of variability in responses through survey construction

The surveys suppress the variability of individual accounts by restricting participants' responses to very constrained circumstances. Potter and Wetherell (1987) note "the procedures psychologists regularly use for dealing with discourse have, often inadvertently, acted as management strategies for suppressing variability" (p.39). The survey is a management strategy that performs a variety of useful functions from the researchers' point of view. It enables patterns to be more easily generated by suppressing variations, and the survey construction to go unnoticed, often even by the researcher, because it is the framework within which responses occur.

4.4.5 Dissociation and the 'social matrix'

The surveys have different treatments for animals in science and in agriculture. The animal is made visible in science, invisible in agriculture. A feature of the 'social matrix' is that meat production is invisible. It is a tacitly protected and dissociated category of

animal use in our society (Plous, 1993). Most people eat meat, including animal rights activists and so do their cats and dogs.[5] Several surveys as described in Chapter Two record that 90-95% of their respondents are meat eaters but do not comment on the high level of ignorance of farm animals' lives and deaths. As Plous (1993) writes, consumptive practices are dissociated from the infliction of harm (p.11). Welfare of food animals is given priority, but they are not accorded rights. The silence in the surveys on the subject of rights for animals in the food industry reflects our society's unquestioned commitment to eating animal flesh.

4.4.6 Summary of survey instrument analysis

The way in which survey instruments are constructed does influence how people respond to them, and therefore generates data that reflects researchers' concerns rather than providing a genuine index to what people think on the subject. The survey instruments, with the exception of the 1999 *New Scientist* survey, have not taken into account the variability of people's responses, and have embedded a number of misconceptions about the actual use of animals in science, the purpose of using the animals and the regulation surrounding animal use.

4.5 How secondary sources characterise animal experimentation

I analyse one book in detail in this section, namely *Animal Experimentation: Cruelty or Science?* by Nancy Day (2000), though refer to other secondary sources . A book is a more varied discursive resource than a survey instrument, and it is therefore treated in more detail. Other secondary sources are briefly referred to.

[5] Scott Plous did surveys of animal rights activists attending rallies in 1990 and 1996 and discovered that, respectively, 37% and 29% of activists were not vegetarian (Plous, 1991) (Plous, 1998). Of the 1996 activists, ***46%*** of those who rated research animals as the movement's top priority were not vegetarian. By contrast, only 12% of the activists who rated farmed animals as a top priority were not vegetarian.

4.5.1 Setting up the framework of debate

Day's book reviews arguments for and against the use of animals in scientific research, pitched at about the level of Years 8-10 of high school. On the cover, the word 'cruelty' has a little skull and crossbones icon next to it, similar to the Jolly Roger pirate flag, and 'science' has an atom with whirling electron paths. Cruelty is concretely signified by skulls, bones and metaphorically pirates, while science is signified by an abstract icon from physics, not physiology. The cover photograph is of a white furry rabbit facing the camera being held down flat to a bench top by a rubber-gloved hand (see Appendix IX for a photocopy of the cover).

Several rhetorical actions are performed by title, icons and cover photograph. First, the photograph makes the animal the centre of frame and gives it a concrete, attractive identity that prompts the viewer/reader to identify with it. Second, the context of the scientific endeavour is made difficult to identify with. All that can be seen is a bit of a person – a hand – holding down the animal. The hand is gloved, giving the impression that the experimenter does not want any direct contact with the animal. Cutting the whole person out of the frame serves analogously to place the purpose and achievements of the scientific endeavour out of the frame, that is, to decontextualise them. Third, the suggested dichotomy in the title question "Cruelty or science?" contains a tacit *ad hominem* attack, implying an essential psychosis in scientists who undertake animal experimentation (see below for more on this issue). Fourth, Day's question excludes other issues: it frames and narrows the debate, which has the effect of glossing over the absence of important issues. Thus, two far-reaching omissions in Day's position can be easily overlooked: how much scientific research in physiology contributes to human and animal health and whether concern for animal welfare in science disregards other less regulated areas of animal use such as agriculture.

4.5.2 Discursive resources of images: pictures are worth a thousand words

In her chapter titled "The case against animal experimentation" Day has two pictures of experimental animals. One is of an anesthetised dog being operated on, and the other is of a rhesus monkey behind bars, looking at the viewer. The affect of the images is that the

animals are helpless and trapped. In her chapter entitled "The case for animal experimentation" there are also two photographs, one of a hairless mouse, and the other of a man in a white coat talking to a pig in a barred enclosure. People feel less concerned about pigs and rodents, as discussed previously, so perhaps this is an attempt at a balanced portrayal of the issue. But why use images of animals? By contrast, the rhetorical effect of photographs of children with polio, or leukemia i.e. those assisted by the research done using animals would be very different. However, Day does not use such images. Instead, Day's choice of images undermines rather than supports arguments for use of animals in science.

4.5.3 Questioning priorities: effects of omission

In her chapter on ethics, Day questions animal rights activists' priorities: "Would animal rights activists be better off fighting to stop the loss of rainforest habitat, where most of the world's species reside, or working to stop experimentation on animals in laboratories?" (p.59). This, though reasonable, begs the question by leaving out a huge component for considering priorities for action on animal use. Agriculture is not mentioned -- not the billions of farm animals bred and killed every year, nor the major role played in rainforest habitat loss by land clearing for animal production. The rhetorical effect of the absence of the issue of animals in agriculture is to enable a higher priority for campaigns against the use of animals in research.

4.5.4 False dichotomies

4.5.4.1 Scientists as sociopaths

Day's title, *Animal Experimentation: Cruelty or Science?* and others, such as "Scientists and animal research: *Dr Jekyll or Mr Hyde*?" [my italics] (Rowan, 1995) suggest a dichotomy that is essentially false, between cruelty (Mr Hyde) and science (Dr Jekyll). Are scientists cruel Mr Hydes, gloating over their victims, or benign Dr Jekylls, working for the good of humanity? We may be led to believe that they are both, as Dr Jekyll was in Robert Louis Stevenson's story, and that they are therefore psychotic.

Herzog (1993) in a contribution to a collection of responses to an article on the apparent contradiction of Nazi support for vivisection and use of Jews for medical experiments by Arluke and Sax, refers to what he calls "the irony of scientists who come home to beloved canine companions who hav[e] spent the day conducting painful experiments on dogs in their laboratory" (pp.82-83). The implication seems to be one of sociopathy. Herzog uses different descriptions for similar actions of animal rights advocates and scientists. For example, he writes "Animal rights activists often draw analogies between the treatment of animals in biomedical research facilities and factory farms and the treatment of Jews in medical experiments and concentration camps" and "Biomedical research advocates have *tried to smear* [my italics] the modern animal protection movement by drawing attention to parallels between the rhetoric of Nazi animal lovers and current movement leaders" (Birke, 1993, p.83). While Herzog is describing the same behaviour, the language for animal rights activists is not judgmental, while it is for science advocates.

4.5.4.2 Creating 'straw men' and omitting wider ethical concerns

An adversarial tone comes out in titles of articles such as "Opinions on animal research: *scientists vs the public*?"[my italics] (Takooshian 1988) and "*Us and them*: scientists' and animal rights campaigners' views of the animal experimentation debate" (Paul 1995) [my italics]. The created dichotomy sets up two fighters in a sharply defined arena that can overlook significant issues in animal protection and in scientific research. The 'rules' favour the anti-research advocates, as the accepted definition of morality is absolute, not utilitarian: that is, any use of animals is wrong. Utilitarian counter-arguments invoked by research advocates -- describing, for example, major health advantages for both humans and animals of products developed using animals -- are subverted by the language of 'rights'. Psychologists are not unaware of the problem. Scott Plous reports:

> A few years ago the psychology department head at a major [USA] mid-western university was asked by a campus committee whether his department would be interested in sponsoring a symposium that included the topic of animal rights. In response, he wrote, "... By the very fact that you have included 'Animal Rights' as an ethical issue within your symposium you have taken sides in this bitter dispute. Your program committee has implicitly conferred legitimacy on a position that delegitimates the core of our discipline." (Plous, 1993)

Scientists claim that it would be unethical *not* to do animal research, given the substantial value of animal research. W. Singer says, "nothing would be more dangerous than to continue acting without knowing what we are doing. Banning [scientific] endeavours aimed at understanding the conditions of survival would be equivalent to the most irresponsible and unethical experiment with our biosphere ... that can be conceived of" (1993, p.200). When the debate is framed in a wider context, the substantive issue is more, "Animal experimentation: saving lives or not saving lives?" rather than "Animal experimentation: cruelty or science?"

4.6 Inconsistency and contrary values

This section examines the notion of inconsistency. In attitude theory, people are inconsistent if they express apparently contradictory views, such as that it is not objectionable to eat animals but it is objectionable to do experiments on them. By contrast, discourse analysts note that people's responses are very dependent on context, so they can hold contrary views without being inconsistent. Two research papers on attitudes to animals are analysed in detail for the treatment of concepts of inconsistency and ignorance.

4.6.1 Rhetorical effects of invoking inconsistency

4.6.1.1 Hills survey: seeing below the surface

Adelma Hills (1994) conducted a survey to discover what people think ethical practice is or should be with respect to the use of animals for scientific research. She found that about two thirds of her sample of 303 Perth residents accepted the need for animals in research, but only when suffering is minimised for the animals and the research is for important medical problems. She also found that 96% of her sample thought eating animals was acceptable, except for puppies. To account for the apparent inconsistencies, Hills elaborates a theory that motives underlie and govern attitudes. She believes that "by focusing on motives [her approach] goes to the heart of issues rather than to the surface positions [of attitudes]" (p.4).

Hill notes that "Attitudes toward the treatment of animals are characterised by ambivalence, not only across different individuals, but also within individuals. People respond differently to similar situations for a variety of reasons" (p.3). For example, individuals varied greatly in their response to the situation of killing an animal for food. 96% of her respondents agreed that there was nothing wrong with killing animals for food. But as soon as the animal was differentiated, so were their responses. When the animal in question was a lamb, they had no objection. However, when the animal was a puppy they did object. Hill describes this as psychological inconsistency, dependent on imperfectly understood motivations.

The different responses Hill obtained can also be interpreted discursively in terms of the habitual social contexts in which they are embedded. As Billig says, common-sense ideology "is not unitary but is dilemmatic, in that it contains contrary values." (Billig, 2001) The common-sense understanding of animals by Westerners is that most of them are fine to eat, except house-dwelling companion animals such as cats and dogs. The cats and dogs are accepted as members of families. A study of U.S. college students' perceptions of animal consciousness showed that over 90% believed that dogs and cats had at least some degree of consciousness (Herzog, 1996). Herzog suggests "[the dogs and cats] are, simply put, our friends." (p.19). Eating them would be a symbolic act of cannibalism, contrary to our common-sense notion of how families function. So once the social context is taken into consideration the psychological inconsistency disappears, though the value of eating this and not that animal remains contradictory.

Concepts of 'surface' attitude, 'deeper' motive and their interrelationship are metaphysical rather than scientific, which means Hills' theory, while interesting and insightful, is essentially speculative. It also puts Hills in the position of seer of esoteric mysteries. The rhetorical consequence is one of power to reveal the meaning and moral direction of those mysteries. She writes: "What is absolutely imperative ... is that people are educated to have realistic empathy ... based on a sound understanding of the behaviour and capabilities of animals" (p.4). We are led to believe that people *should* know more about animals *sui generis,* not as convenient adjuncts to human lives. But she concludes with an exhortation to the scientific community in particular – not the general public -- to "better understand their own motives, and to more effectively communicate with other members

of society" (Hills, 1994). She has placed the moral onus on the scientists who have the responsibility not only to use their animals humanely, but to make sure they themselves have blameless and consistent motives, and additionally, tell everyone else what they are doing and why. In doing so, Hills subscribes to the deficit model: people do not understand so they must be told.

Hill's argument achieves several rhetorical outcomes through both focus and omission. First, it targets a specific minority group -- "those involved in using animals for research and teaching" (p.4) -- that uses animals and has to account publicly for its use. Second, it puts the members of the group on the defensive if they accept Hills' frame of reference. Third, the scientific research is not placed in the wider ethical context of its achievements. Fourth, there is no recommendation to the general public to examine their motives with respect to their daily use of animals for food, clothing, entertainment and other purposes.

4.6.1.2 Braithwaites' survey: deliberate exploration of inconsistency

Braithwaite and Braithwaite (1982) in their survey of general attitudes to animal suffering (described earlier in Section 4.3.1) suggest "the animal welfare/animal rights movement should be less concerned with changing public attitudes than with mobilizing existing attitudes that support animal rights-related ideals into conduct that is consistent with those ideals." (p.48). This is direct advice for animal rights activists and, as with most other attitude surveys on the subject, contains an implicit, undefined acceptance of the idea of "animal rights". However, it is also an explicit cognitivist formulation of the attitude as a mental entity with which a person's behaviour may or may not be consistent.

The Braithwaites (1982) have two statements in their survey, designed to explore "the structure of the inconsistencies *between attitudes and behavior*" [their italics]. They wished to see whether people respond differently to the same animal in the same circumstance. They ask whether people approve or disapprove of "Eating pate produced by the force-feeding of geese", and "Force-feeding of geese to make their livers swell up to produce pate for restaurants". Respectively, 44% and 73% disapproved. They argue that it points to inconsistency of attitudes to animal suffering. But the statements are constructed so differently that a different response is highly likely. The second statement

has what happens to the geese (force-feeding) and the geese themselves at the beginning – the animal is foregrounded. It says what happens in detail to the animal (the livers swelling up), which focuses attention on the animal and its feelings. Then it says the pate is for restaurants, a non-essential use. I think that the different levels of disapproval show consistent distaste for unnecessary cruelty to animals, rather than, as they argue, contradictory attitudes about meat eating and production (p.43). In general terms, 92% of the Braithwaites' respondents found eating meat acceptable.

4.6.2 Summary of inconsistency analysis

The analysis shows that people do not object to using animals as such, but they do care whether an animal suffers. Therefore, people are not being inconsistent in their patterns of not objecting to eating animals if the animals do not suffer and of objecting to experiments being done on animals if the animals are made to suffer.

4.7 Chapter conclusion

Chapter Four has discursively analysed a variety of material. Broadly speaking, the analysis suggests that three crucial factors are determining survey results.

First, survey instruments and other material have revealed theoretical positions with respect to the concept of attitudes. The surveys are predicated on the theoretical assumption that some cognitive entity inside the respondents – the attitude -- is measured by the survey. That supposed entity not only varies from survey to survey, but results obtained within surveys appear to show inconsistent attitudes. This implies that survey construction itself is influencing people's responses.

Second, the survey instruments embody, albeit unintentionally, the deficit model – that is, a belief in the public's ignorance that has to be amended with education. Preconceptions of the nature of science, its use of animals and of people's limited capacity to understand science are informing survey construction and determining the results to some, perhaps considerable, extent.

Third, cultural determinants such as the dissociation regarding eating of animals and the social construction of a hierarchy of high and low status animals are common to the discourses of attitude researchers, writers of secondary sources, animal researchers and from the Nicoll and Russell (1990) study, the animal rights movement. The material analysed in this chapter shows characteristic social constructions of animals and science consistent with the cultural determinants. Therefore, while it might seem that the priorities of the animal rights movement have influenced attitude researchers, it cannot be construed that the researchers conducting the surveys are themselves animal rights advocates, influenced by animal rights discourse, or even sympathetic to the idea of 'animal rights'.

The final chapter draws together the research findings and concludes the thesis.

Chapter Five: Discussion

5.1 Introduction

Attitude surveys by their very nature beg several questions. The assumption that "attitudes are enduring entities which generate equivalent responses from occasion to occasion" (Potter, 1987, p.53) does not take into account the variability of an individual's responses on a given topic. The 'object' of the survey about which people report attitudes -- in this case the animal -- has status that varies according to its context. Another problem identified by Potter and Wetherell (1987) regarding analysis of data from attitude surveys is that participants' responses are translated into analysts' categories as provided by the structured procedure of the survey (p.53). The survey items are not a neutral, transparent, descriptive medium for choices that accurately reflect what a respondent may think. Potter and Wetherell argue that words are not simply *about* actions or events, they are a "potent working part of these things" (Potter, 1987, p.72). The language used constructs responses.

Patterns emerge from the fine-grained analysis of the discourse of survey instruments. Not every survey has all characteristics described below. However, orientation to animals is emphasised and constructed, whether intentional or not, by use of the following features:

- Predominant reference to one type and context of animal use, namely experiments for scientific research
- Items tend to give the experimental animal's 'point of view', not the points of view of the human or animal beneficiaries of the science
- A moral dimension is given to animal use in experiments by using the phrase 'animal rights'
- Misinformation that animals routinely experience distress in experiments
- Misleading emphasis that primates and typical companion animals -- animals that Westerners can most easily empathise with as having rights, a 'point of view' and a capacity to suffer -- are used far more than other species in experiments

There are also significant omissions. There is little or no:

- contextualisation of experiments in terms of the bigger picture of benefits, outcomes and this wider ethical framework
- attempt to convey what basic science is about, difficult as that may be
- attempt to bring out the difference between what people understand by 'animal rights' and 'animal welfare'
- reference to animal rights with respect to non-scientific use of animals

The rhetorical effects of the emphases and omissions are several, which are summarised below.

5.2 Hierarchy of concern and the social matrix

There is a hierarchy of concern where some animals are accorded more value than others that already exists as part of our culture. The hierarchy identified in the surveys reflects a social reality, a part of our social matrix (Fairclough, 1992, p.237). People care more about animals they feel kin to and do not want them to suffer. Moreover, it is the case that animals in science are privileged by virtue of animal protection and rights advocates making claims on animals' behalf for rights and for close attention to welfare, including an insistence on ethics committees to oversee experimental protocols. This does not happen for animals in other contexts to the same extent, such as typical farm animals. The omissions are reflected in social representations, where for example the animals named in surveys fall into the categories of research subjects, wildlife, companions, fashion items, generally not agriculture or food. Arguably, there are features of the social matrix that influence all the different discourses in this study. These features may account for the fact that animals are privileged and foregrounded in a scientific context, rather than the hypothesis that one group might be influencing another group.

5.2.1 Status conferred by context

There is different status accorded by social convention to various categories of animals: e.g. companion, utility, 'pest', etc. Scientists occasionally use animals with which people

are familiar in a domestic, companion role such as cats and dogs that also are generally not farmed. Farmers not only do not farm dogs and cats, they use them in a way consistent with their role as companions in families: as valuable life-long assistants e.g. herding sheep, or reducing rodent populations. Dogs and cats are high status animals by virtue of being valued and individuated. Primates and cetaceans are also not farmed, and they are considered to have emotional lives kin to our own. People will pay attention and feel uncomfortable if such high status animals are used in a non-companion, de-individuated and apparently cruel context such as science seems to be. They will be more likely to record the attitude that animals should not be used in experiments.

5.2.2 Type of use of animals

The type of use of animals by science and agriculture is very different, with different impacts on people's thinking. In science, animals in experiments must often be intact and alive. This means they remain recognisable, 'photogenic' and can be easily identified with. (The animals are anesthetized but this is not emphasised in the survey items.) Live animals have feelings, but dead ones do not. Farm animals killed for meat production reach most consumers as pieces usually not recognisable as a whole animal. Animal heads are not usually sold in butcher shops, being too reminiscent of the living animals the heads once belonged to. The process of meat production is dissociated, that of animal experimentation is not.

5.2.3 Status of the discipline of science

If there is a social convention that science is considered to be higher status than agriculture, then it may partly account for the higher status given to animals in science than in agriculture.

5.3 Moral status of animals as indicated by use of the term 'rights'

The consequence of a hierarchy is that animals are seen to deserve rights in science but not elsewhere. Yet the phrase 'animal rights' is generally not analysed or defined by attitude researchers. None of the survey instruments in this sample ask "What do you

think animal rights are?" Nor in general is the need for a definition alluded to. One writer openly dismisses clarification of the rights issue: "Animal rights? Animal interests? Reverence for life? The terminology is unimportant: it is respect for other creatures which is of the utmost importance." (Monamy, 2000)

People tend to confuse 'rights' with our responsibility and duty of care for the welfare of the animals we use, but the confusion is not discussed, and certainly not sorted out. The surveys are less informative and useful for this reason. People can so easily say, "Yes, I'm in favour of animal rights", when they may really mean, "Yes, I'm in favour of humane treatment of animals". The rhetorical effect of bringing 'rights' into the discussion is to promote a moral response to the concept of 'animal' by emphasising its likeness to us, but this is done only in the scientific context.

5.4 The depiction of science and scientists as cruel

There is a lack of effective description of basic science in survey items. The value of basic science is not conveyed, and therefore not justified. If there is no apparent benefit to basic research, it seems unnecessary from the survey participants' perspective. If an enterprise is unnecessary or frivolous, then inflicting pain on animals in the process of serving that enterprise is perceived as unnecessary and therefore cruel, as the Braithwaites' survey items on goose paté showed (see Section 4.6.1.2). Survey items often construct suffering and pain for animals as a necessary consequence of scientific research, which is incorrect. Rhetorically, however, describing animal suffering is more immediate and evocative than either describing complex and intangible research and its potential benefits or describing animals that do not suffer. It is more likely to obtain a strong negative response from survey participants.

The style of animal use in science is perceived as cruel because as mentioned above, some scientific research has to use intact, live animals. Therefore, scientists as constructed by surveys are cruel, inflicting pain on animals *for its own sake.* They are also constructed as selfish, pursuing both their frivolous, heartless curiousity and their careers. Survey participants will more often than not agree with statements that say that scientists require greater scrutiny and intervention.

5.5 Pragmatism is not incompatible with concern for animals

The moral vision invoked in the survey instruments by reference to 'rights' is for humans to value other animals as they do themselves. It is an ideal world view, and one which survey respondents often want to agree with. Yet most people are utilitarian and do not object to using animals (most of them eat animals) or animal products. Animals and their products are used by all of us in countless ways. They are a means to many ends – which is not to say that they are not valued and well cared for.

The survey analysis shows that people in general do care about animal welfare. Survey respondents are very uncomfortable when confronted with a situation in which pragmatic ends are played down or omitted and the animal's distress is emphasized. They object to cruelty, that is, hurting animals unnecessarily. Survey researchers' interpretations tend to be that people think animals should not be used because the animals have in some sense 'rights'.

5.6 Implications of the findings in this study

5.6.1 Misinformation and stigma

Surveys do not simply find out what people think, they effectively structure the data obtained. As mentioned above, the surveys embody the rhetorical effects of incorrectly portraying science, the use of animals in science and the benefits of basic scientific research. The wider ethical issues of why animals are used, not humans, and failing to understand basic mechanisms of physiology are left out of public debate because of the narrow focus on animal welfare when discussing use of animals in science.

A serious potential consequence of the publication of surveys that effectively convey misinformation about scientific use of animals and science itself is that negative stereotypes and misconceptions are reinforced in both survey participants and readers of the survey results and interpretations. This leads to the creation of stigma.

There are direct consequences of a stigma against using animals in research. For example, Qantas has had for several years a ban on carrying animals for research and this was lifted only in October 2001. Misinformation is perpetuated on products with labels saying "Cruelty free" and "No animal testing". Scientists who use animals in their research remain a target for terrorist activism and are reluctant to communicate about their work except in highly specific scientific contexts. My own recent experience when reporting for university publications is that editors often prefer not to mention that live, intact animals are used in some research.

5.6.2 Informed public awareness and taking things for granted

Does it matter whether people know how biomedical science is done, including the role of animals in research? We go to the doctor, get our prescriptions and get on with life. Are we trusting that a good job is being done by both the scientific institutions which do the research which generates the information which gets taught to medical students and the institutions of the pharmaceutical corporations which use basic research to develop medical treatments? Or are we ignorant? Or both?

Whether it is trust or ignorance, many of us do take for granted the entire scientific infrastructure and the knowledge it produces. For example, "Germs cause disease" is a truism now, thanks to Louis Pasteur's research using chickens in the nineteenth century. Pasteur's data have become a 'given', received common knowledge that is beyond question to the point where people often think that it is obvious.[6] So it is not surprising that the 'givens' from scientific research are absorbed without comment into anti-scientific, anti-biomedical discourse such as animal rights activism. People

[6] I call this "the Holmes effect". Sherlock Holmes' clients marvel at his detailed, accurate account of who they were and what they had been doing before they say a word, and ask, "How do you know all that?" Before Holmes gives them the explanation, his insight seems magical. Then he explains in matter-of-fact terms the close, systematic observation of fine details and their significance based on his knowledge, and his clients say with relief, "Oh, it's *obvious*!" They think it is simple, intuitive 'common sense', because the explanation is straightforward and relates directly and accurately to them. There is little understanding of how much knowledge, insight and analysis are required for Holmes' perceptive discoveries.

who believe that animals have rights use products derived from animal testing and do not perceive the bad faith inherent in labels that claim "No animal testing" or "Cruelty free". The proper response to that is, "Well, how do we know it is safe? What about all the animal testing that went on before 'cruelty free' testing to make sure that all the basic ingredients are safe?"

Perhaps a more informed public awareness is possible if all medicine containers and common household products were labelled with "Produced with animal testing".

5.7 Recommendations for future study

5.7.1 Interviewing the general public

Existing surveys obtain results biased towards animals and against science, and promote misinformation. I did an informal survey at a seminar gathering at the Centre for Public Awareness of Science at ANU in October 2001. I asked the group of about 20 people if they felt uncomfortable about the use of animals in scientific research. About two thirds put up their hands including a scientist who works with animals for his research. My present analysis indicates that the response could have been radically different if I had asked the question in a different way, giving primacy to science benefits and animal welfare.

Data need to be obtained which show that results do depend on what goes into the foreground as valued in the questionnaire, survey or interview. Furthermore, the misinformation tacitly present in most existing survey instruments on attitudes to animals can be omitted.

Further study to explore on an individual basis what distinctions are actually made in conversation about different contexts and types of animal use would reveal what participants see as consistent and different. The distinctions people make in discourse have actual consequences in their social lives, influencing their choices about what they say and do.

5.7.2 Interviewing social scientists

Discourse analysis of surveys reveals negative orientations to science and scientific use of animals and positive orientation to animals within the formal structure of the survey. Another and different question arises from contrasting formal and informal discourses. Interviews with attitude researchers to obtain informal accounts of why they constructed the surveys the way they did could reveal differences, if any, from their orientation as analysed in the surveys. It would not change the results of the discourse analysis of the survey instruments, but may reveal a quite different set of assumptions structuring the informal discourse.

For instance, James Serpell, one of the researchers I corresponded with by email, has written books and articles on attitudes to animals. In an email, he describes how he feels about the human outlook on animals:

> So much depends on cultural constituted attitudes to animals, and individual perceptions concerning who or what is worthy of moral/compassionate consideration. Most people in the West are brought up to believe that humans are infinitely more morally considerable than other animals. Or to put it another way, there is no (or very little) social stigma attached to being indifferent to animal welfare, whereas few people will admit to being indifferent to human welfare. (J. Serpell, personal communication, November 21, 2001)

Serpell clearly believes that humans mostly are anthropocentric and he feels very strongly that non-human animals deserve more consideration than they get. His and Paul's 1993 survey (developed from Alan Bowd's survey - see Appendix V) and discussion of results almost seem structured to influence people's consciousness of animals by emphasizing the animal 'point of view' (Paul & Serpell, 1993). In an interview, it is possible to ask directly about that and other issues.

5.8 Limitations of study

The methodological limitations are described in Chapter One (Section 1.5) and Chapter Three (Section 3.4). The recommendations for further study in the preceding section have implicit in them what the limitations of the scope of this study are. It would have been

useful to see more survey instruments, but all with the exception of one (*New Scientist*) showed similar patterns.

5.9 Conclusion

Discourse analysis of attitude surveys shows a strong orientation towards animal welfare and animal rights in the science context rather than how the science benefits humans and animals. Stereotypical misconceptions about the use of animals in research are promoted, albeit perhaps unintentionally. This has the potential to bias the results obtained by the surveys towards many people not being in favour of using animals for scientific research. Similar misconceptions and orientations exist in secondary literature on animal experimentation.

Attitude surveys show, mostly indirectly, that people are strongly against unnecessary suffering for animals. Therefore there is potential for effective reduction of stigma against science by showing that animals do not suffer by characterising correctly the scientific enterprise. There is also potential, related to but not the main concern of this study, for directing people's concern about animals away from the 'straw man' of science to areas of animal use outside of science where there may be genuine needs for improvement in animal welfare.

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Appendix Ia

Table 1: Search sets containing industry terms and 'animal rights' or 'animal welfare'

Industry terms	No. of articles	No. of articles with 'animal rights'	% with 'animal rights' ↓ order	Industry terms	No. of articles with 'animal welfare'	% with 'animal 'welfare' ↓ order
'animal experiments' & *'animal research'* & *'laboratory animals'* ♥	10	8	80	'animal husbandry' and 'farm animals'	5	71.4
'animal research'	75	26	34.7	*'animal experiments'* and *'animal research'* and *'laboratory animals'*	7	70
'animal experiments'	177	39	22.0	*'animal research'*	18	24.0
'laboratory animals'	125	24	19.2	'animal husbandry'	8	21.0
'animal husbandry' and 'farm animals'	7	1	14.3	*'laboratory animals'*	24	19.2
'farm animals'	114	8	7.0	'farm animals'	20	17.5
'animal husbandry'	38	1	2.6	*'animal experiments'*	29	16.4
farm	778	20	2.6	Farming and farm and agriculture	6	5.7
science and *research* and *laboratory*	1354	23	1.7	farm	39	5.0
farming	748	10	1.3	farming	28	3.7
agriculture	1846	17	0.92	agriculture	46	2.5
farming and farm and agriculture	103	1	0.87	*science* and *research* and *laboratory*	26	1.9
laboratory	5287	50	0.57	*laboratory*	49	0.68
research	14877	108	0.13	*research*	116	0.2
science	12223	70	0.07	*science*	77	0.09

Note: ♥ science terms in italics, to more easily distinguish them from agriculture terms

Appendix Ib

4.2.1.2 Table 2: Ranking of species for animal rights and animal welfare

Specific animal	No. articles containing the animal name	No. of articles with 'animal rights'	%AR♣ ↓ order	**Specific animal**	No. of articles with 'animal welfare'	%AW♣ ↓ order
primate	367	25	6.8	rabbit	20	7.4
cat	485	16	6.1	chicken	14	6.1
rabbit	269	16	5.9	primate	21	5.7
dog	579	26	4.5	dog	32	5.5
chimp	391	15	3.9	chimp	16	4.1
rodent	237	8	3.4	rodent	8	3.4
pig	675	17	2.5	cow	27	2.9
chicken	227	5	2.2	sheep	20	2.6
rat	893	19	2.1	rat	18	2.0
cow	916	9	1.0	cat	9	1.9
sheep	775	7	1.0	pig	12	1.8
bird	1842	16	0.9	bird	28	1.5
Generic category of animal				**Generic category of animal**		
zoo animal	18	10	55.6	zoo animal	10	55.5
laboratory animal	125	24	19.2	laboratory animal	24	19.2
farm animal	114	8	7.0	farm animal	20	17.5
pet	197	11	5.6	pet	16	8.1
wildlife	1257	26	2.1	livestock	17	4.9
reptile	291	2	0.7	wildlife	29	2.3
livestock	348	2	0.6	reptile	4	1.4
invertebrate	240	0	0.0	invertebrate	3	1.3

Notes: ♣ Percentage figures are rounded up to one decimal place.

Appendix II

Survey instrument of J. Braithwaite and V. Braithwaite (1982) published in *International Journal for the Study of Animal Problems*, 30:42-49 1982

The table of 74 items is rank ordered from lowest to highest level of SD (Strongly Disagree). D=Disagree, N=Neither approve nor disapprove, A=Agree, SA=Strongly agree. I have numbered the items for ease of reference. It runs across 2 pages in this appendix.

	Approval or Disapproval of Practices Relating to Animals	SD	D	N	A	SA
1	The law should force abattoirs to kill animals painlessly even when the animals could be killed more cheaply and efficiently by a painful method	2	4	14	43	37
2	There is nothing wrong with eating meat if eating meat is the only food available for human survival	3	7	10	44	35
3	Commercial fishing with nets	3	8	37	44	7
4	Eating meat from an abattoir which uses humane methods of killing	4	4	39	41	12
5	I would be prepared to pay a higher price for meat to cover the cost of more humane methods of rearing animals for slaughter	5	15	21	41	18
6	Killing toads painlessly in testing a new drug before it is used on humans	5	10	30	43	13
7	Spraying insects in the home with insect spray	5	12	19	47	18
8	Killing mice in a mouse trap	6	14	26	41	11
9	Killing mice painlessly in testing a new drug before it is used on humans	6	11	28	41	12
10	Leaving a moth which has fallen in a tub of water to drown	6	29	54	9	1
11	Protecting crops by spraying chemicals which kill beetles and insects	7	16	26	43	8
12	Killing sharks found near beaches used by bathers	9	23	17	37	14
13	Killing monkeys painlessly in testing a new drug before it is used on humans	10	24	29	32	5
14	Big game fishing	11	21	39	25	4
15	Buck jumping at a rodeo	11	21	48	17	3
16	Shooting animals for sport when the animal is a pest to farmers	14	32	26	25	4
17	Rabbit shooting	15	28	27	25	5
18	A person having his dog put to sleep painlessly because it has become a nuisance to him	15	26	28	24	6
19	Killing dogs painlessly in testing a new drug before it is used on humans	15	30	23	27	5
20	Eating meat from an abattoir which uses inhumane methods of killing	16	25	50	8	2
21	Branding cattle with a hot iron	16	25	40	17	2
22	Eating pate produced by the force-feeding of geese	18	28	42	9	4
23	Shooting kangaroos to cut down on kangaroo overpopulation	18	26	25	26	5
24	Wearing genuine fur coats	19	28	35	36	3
25	Killing mice painlessly for non-medical research	19	27	30	21	3
26	It is wrong to eat meat when there is an alternative satisfactory diet available	19	46	23	9	4
27	Shooting game birds	20	41	22	15	2
28	Killing toads painlessly for non-medical research	21	30	28	18	3
29	Confining pigs in very small sties	23	55	19	3	0
30	Jockeys whipping horses in races	24	36	30	8	2
31	Killing toads painfully in testing a new drug before it is used on humans	24	35	22	16	3
32	Failing to stop to assist a kangaroo which has been knocked down on the side of the road	25	44	28	3	0
33	Killing mice painfully in testing a new drug before it is used on humans	25	38	19	16	2
34	Leaving cattle overnight in an abattoir holding yard without food or water	27	41	24	7	0
35	A farmer refusing to spend the money to have a very sick pig treated by a vet	27	41	28	4	0
36	Sending monkeys up in space shots so that they die in outer space	28	34	29	9	1
37	Conducting painful experiments with toads to test whether new eye cosmetics would sting the eyes of humans	29	40	19	12	1

	Approval or Disapproval of Practices Relating to Animals	SD	D	N	A	SA
38	Overcrowding cattle on a semi-trailer during a long trip	32	48	17	3	0
39	Killing monkeys painlessly for non-medical research	35	39	17	8	1
40	Conducting painful experiments with mice to test whether new eye cosmetics would sting the eyes of humans	35	42	16	7	0
41	Killing mice painfully for non-medical research	37	44	12	6	1
42	It is wrong to eat meat under any circumstances	37	50	10	2	1
43	Force-feeding geese to make their livers swell up to produce pate for restaurants	38	35	21	5	1
44	Killing monkeys painfully in testing a new drug before it is used on humans	38	38	13	11	1
45	Killing dogs painlessly for non-medical research	38	38	15	8	2
46	Recklessly destroying a bird's nest while clearing a piece of land	40	40	18	2	0
47	Refusing to spend the money to take a very sick cat to the vet	41	44	11	3	1
48	Intentionally placing a moth in a tub of water to watch it drown	43	41	14	2	0
49	Caging wild animals in small cages at a zoo	44	45	9	1	0
50	Keeping laying chickens in battery cages which are so small that they cannot spread their wings	45	44	10	0	0
51	Killing dogs painfully in testing a new drug before it is used on humans	45	33	11	9	2
52	Bull fighting in which the bull is killed	46	35	15	4	0
53	Conducting painful experiments with monkeys to test whether new eye cosmetics would sting the eyes of humans	47	40	9	5	0
54	Leaving drought-stricken cattle to slowly starve instead of shooting them	47	44	7	1	0
55	Killing toads painfully for non-medical research	49	35	11	4	1
56	Cock fighting in which the chicken is killed	53	34	10	3	0
57	Conducting painful experiments with dogs to test whether new eye cosmetics would sting the eyes of humans	54	38	6	3	0
58	Killing monkeys painfully for non-medical research	54	38	6	2	0
59	Using live bait for greyhound training	55	31	11	2	1
60	Keeping a cockatoo in a cage which is so small that it cannot spread its wings	55	42	2	0	0
61	Shooting pelicans	57	37	5	0	0
62	A person killing his pet dog and then eating it for food	58	20	17	5	0
63	Getting rid of a pet dog by leaving it loose in the bush	59	34	5	2	0
64	The use of inhumane killing methods at an abattoir	59	31	8	1	0
65	Killing dogs painfully for non-medical research	62	29	7	2	0
66	Shooting an elephant for its tusks	62	30	6	1	0
67	Tying up a dog on a very short rope for periods of more than twelve hours	63	32	4	2	0
68	Harpooning whales	63	25	8	3	0
69	Killing animals painfully when there is an alternative method which is painless	76	20	1	1	0
70	Setting a poison meat bait for a dog	78	16	5	1	1
71	A person letting his pet dogs loose in the bush and shooting them for sport	86	13	1	1	0
72	Shooting an animal for sport when the animal is close to extinction	88	10	1	0	0
73	Leaving a pet dog without food or water for a long period	89	10	1	0	0
74	A person leaving his dog to starve to death because it has become a nuisance to him	92	7	1	0	0

Appendix IIIa

Survey instrument of Janis Driscoll published in *Anthrozoos* 5 (1):31-39 1992

#	Questionnaire items and Ratings (1 = acceptable, 5 = unacceptable)	Ratings
1	A researcher raises baby monkeys in isolation to find out how this will affect later behavior as parents	2.95
2	A researcher gives mice electric shocks to find out how fast they learn	3.08
3	A researcher puts electrodes into the brains of monkeys to study the effects of cocaine on brain function. Anesthetic is used for the surgery. The monkeys are killed at the end of the experiment	3.72
4	A researcher burns the skin of frogs to study the effects of various treatments on burns. Anesthetic is used for the original burns but not afterwards.	3.39
5	A researcher raises baby sunfish in isolation to find out how this will affect later behavior as parents	2.23
6	A researcher does surgery on the brains of dogs to try to understand Alzheimer's disease. Anesthetic is used for the surgery. The dogs are killed at the end of the experiment.	3.37
7	A researcher puts electrodes into the brains of rats to study the effects of cocaine on brain function. Anesthetic is used for the surgery. The rats are killed at the end of the experiment	2.82
8	A researcher gives cockroaches electric shocks to find out how fast they learn	2.03
9	A researcher burns the skin of cats to study the effects of various treatments on burns. Anesthetic is used for the original burns but not afterwards.	3.87
10	A researcher puts electrodes into the brains of frogs to study the effects of cocaine on brain function. Anesthetic is used for the surgery. The frogs are killed at the end of the experiment	2.95
11	A researcher does surgery on the brains of rats to try to understand Alzheimer's disease. Anesthetic is used for the surgery. The rats are killed at the end of the experiment.	2.55
12	Mice are fed a new household cleaner to find out how poisonous it is.	3.18
13	A researcher gives dogs electric shocks to find out how fast they learn	3.73
14	A new eye makeup is put into the eyes of monkeys to find out if it is damaging to the eyes. No anesthetic is used.	3.92
15	Medical students operate on rats to learn anatomy and surgery. Anesthetic is used for the surgery. The rats are killed while under anesthetic.	2.18
16	Cats are fed a new household cleaner to find out how poisonous it is.	4.14
17	Psychology students at a college give fish electric shocks in a learning experiment.	3.03
18	Dogs are given a new drug which is thought to help heart disease to find out if it has bad side effects.	2.84
19	Biology students at a college dissect dead cats to learn anatomy.	1.69
20	A person purchases a coat made from the skins of cheetahs, an endangered species.	4.56
21	Frogs are given a new drug which is thought to help heart disease to find out if it has bad side effects.	2.17
22	Medical students operate on dogs to learn anatomy and surgery. Anesthetic is used for the surgery. The dogs are killed while under anesthetic.	3.27
23	Sparrows are fed a new household cleaner to find out how poisonous it is.	3.66
24	A person shoots and kills a cat that is yowling outside his window at night.	4.61
25	A new eye makeup is put into the eyes of mice to find out if it is damaging to the eyes. No anesthetic is used.	3.41
26	Rats are given a new drug which is thought to help heart disease to find out if it has bad side effects.	2.17
27	Psychology students at a college give rats electric shocks in a learning experiment.	2.92
28	A person kills a non-poisonous snake in his garden.	3.31
29	A person purchases boots made from the skin of crocodiles, an endangered species.	4.29
30	A researcher raises baby rats in isolation to find out how this will affect later behavior as parents	2.41
31	Cockroaches are fed a new household cleaner to find out how poisonous it is.	2.00
32	Leeches are killed so that their saliva can be used in human blood clotting research	1.67
33	Biology students at a college dissect dead frogs to learn anatomy.	1.58
34	A person purchases a coat made from the skins of wild coyotes.	3.74
35	A person traps and kills mice in his basement	1.78

Appendix IIIb

Survey instrument of Janis Driscoll ordered by ratings from high to low:

#	Questionnaire items and Ratings (1 = acceptable, 5 = unacceptable)	Ratings
24	A person shoots and kills a cat that is yowling outside his window at night.	4.61
20	A person purchases a coat made from the skins of cheetahs, an endangered species.	4.56
29	A person purchases boots made from the skin of crocodiles, an endangered species.	4.29
16	Cats are fed a new household cleaner to find out how poisonous it is.	4.14
14	A new eye makeup is put into the eyes of monkeys to find out if it is damaging to the eyes. No anesthetic is used.	3.92
9	A researcher burns the skin of cats to study the effects of various treatments on burns. Anesthetic is used for the original burns but not afterwards.	3.87
34	A person purchases a coat made from the skins of wild coyotes.	3.74
13	A researcher gives dogs electric shocks to find out how fast they learn	3.73
3	A researcher puts electrodes into the brains of monkeys to study the effects of cocaine on brain function. Anesthetic is used for the surgery. The monkeys are killed at the end of the experiment	3.72
23	Sparrows are fed a new household cleaner to find out how poisonous it is.	3.66
25	A new eye makeup is put into the eyes of mice to find out if it is damaging to the eyes. No anesthetic is used.	3.41
4	A researcher burns the skin of frogs to study the effects of various treatments on burns. Anesthetic is used for the original burns but not afterwards.	3.39
6	A researcher does surgery on the brains of dogs to try to understand Alzheimer's disease. Anesthetic is used for the surgery. The dogs are killed at the end of the experiment.	3.37
28	A person kills a non-poisonous snake in his garden.	3.31
22	Medical students operate on dogs to learn anatomy and surgery. Anesthetic is used for the surgery. The dogs are killed while under anesthetic.	3.27
12	Mice are fed a new household cleaner to find out how poisonous it is.	3.18
2	A researcher gives mice electric shocks to find out how fast they learn	3.08
17	Psychology students at a college give fish electric shocks in a learning experiment.	3.03
1	A researcher raises baby monkeys in isolation to find out how this will affect later behavior as parents	2.95
10	A researcher puts electrodes into the brains of frogs to study the effects of cocaine on brain function. Anesthetic is used for the surgery. The frogs are killed at the end of the experiment	2.95
27	Psychology students at a college give rats electric shocks in a learning experiment.	2.92
18	Dogs are given a new drug which is thought to help heart disease to find out if it has bad side effects.	2.84
7	A researcher puts electrodes into the brains of rats to study the effects of cocaine on brain function. Anesthetic is used for the surgery. The rats are killed at the end of the experiment	2.82
11	A researcher does surgery on the brains of rats to try to understand Alzheimer's disease. Anesthetic is used for the surgery. The rats are killed at the end of the experiment.	2.55
30	A researcher raises baby rats in isolation to find out how this will affect later behavior as parents	2.41
5	A researcher raises baby sunfish in isolation to find out how this will affect later behavior as parents	2.23
15	Medical students operate on rats to learn anatomy and surgery. Anesthetic is used for the surgery. The rats are killed while under anesthetic.	2.18
21	Frogs are given a new drug which is thought to help heart disease to find out if it has bad side effects.	2.17
26	Rats are given a new drug which is thought to help heart disease to find out if it has bad side effects.	2.17
8	A researcher gives cockroaches electric shocks to find out how fast they learn	2.03
31	Cockroaches are fed a new household cleaner to find out how poisonous it is.	2.00
35	A person traps and kills mice in his basement	1.78
19	Biology students at a college dissect dead cats to learn anatomy.	1.69
32	Leeches are killed so that their saliva can be used in human blood clotting research	1.67
33	Biology students at a college dissect dead frogs to learn anatomy.	1.58

Appendix IV

Harold Herzog's animal attitude scale. Unpublished, and included here with the author's permission. [Note: In transcribing the scale, I have not included the response categories which are under each item in the survey instrument as provided to me by Herzog, as I am interested only in the items themselves for the analysis]

Here is a copy of the scale as we have used it in recent studies. The original version has 29 items. Some of the items (21 to 29) were designed to get at the subjects' perceived tendency to actually "do something" to help animals. We thought that this might turn out to be a useful subscale. But when we did a factor analysis all of the items essentially lumped into one big factor. We [Mathew and Herzog] have found that the alpha is about .90 or a little higher in several administrations. Hope this is useful.
Hal Herzog

ANIMAL ATTITUDE SCALE

Listed below are statements regarding animals. Circle the letters that indicate the extent to which you agree or disagree with the statement, where SA indicates Strongly Agree, A indicates Agree, U indicates Undecided, D indicates Disagree, and SD indicates Strongly Disagree.

1. It is morally wrong to hunt wild animals just for sport.

2. I do not think that there is anything wrong with using animals in medical research.

3. There should be extremely stiff penalties including jail sentences for people who participate in cock-fighting.

4. Wild animals, such as mink and raccoons, should not be trapped and their skins made into fur coats.

5. There is nothing morally wrong with hunting wild animals for food.

6. I think people who object to raising animals for meat are too sentimental.

7. Much of the scientific research done with animals is unnecessary and cruel.

8. I think it is perfectly acceptable for cattle and hogs to be raised for human consumption.

9. Basically, humans have the right to use animals as we see fit.

10. The slaughter of whales and dolphins should be immediately stopped even if it means some people will be put out of work.

11. I sometimes get upset when I see wild animals in cages at zoos.

12. In general, I think that human economic gain is more important than setting aside more land for wildlife.

13. Too much fuss is made over the welfare of animals these days when there are many human problems that need to be solved.

14. Breeding animals for their skins is a legitimate use of animals.

15. Some aspects of biology can only be learned through dissecting preserved animals such as cats.

16. Continued research with animals will be necessary if we are to ever conquer diseases such as cancer, heart disease, and AIDS.

17. It is unethical to breed purebred dogs for pets when millions of dogs are killed in animal shelters yearly.

18. The production of inexpensive meat, eggs, and dairy products justifies maintaining animals under crowded conditions.

19. The use of animals such as rabbits for testing the safety of cosmetics and household products is unnecessary and should be stopped.

20. The use of animals in rodeos and circuses is cruel.

Appendix V

Survey instrument of Alan Bowd (1984). Unpublished and included here with the author's permission.

SCALE OF ATTITUDES TOWARD THE TREATMENT OF ANIMALS (SATA)

Author: Alan D. Bowd, Ph.D.
Address: Faculty of Education, Lakehead University, Thunder Bay, Ontario, Canada

Instructions

The items in this survey are in the form of statements relating to aspects of the treatment of animals. Please indicate your degree of agreement or disagreement with each item by underlining the appropriate word or phrase following each statement, (or by responding using the answer sheet provided).

If you strongly disagree with the statement as it stands underline the words "strongly disagree", and so on, with regard to the other attitudes (disagree, undecided, agree, strongly agree).

[Note: In transcribing the SATA, I have not included the response categories which are under each item in the survey instrument as provided to me by Alan Bowd, as I am interested only in the items themselves for the analysis]

1. Feral (wild) cats should be controlled by systematic poisoning or shooting.

2. As long as adequate food, ventilation and light are provided there is nothing cruel about battery hen farming.

3. Painful scientific research using animals which has no practical results should be abolished.

4. Too much fuss is made about the supposed cruelty involved in hunting animals for their fur.

5. De-clawing of cats to protect furniture is cruel and unnecessary.

6. Transport of food animals, such as cattle or sheep, by road and rail involves little or no discomfort and cruelty.

7. In scientific research the discovery of knowledge is paramount, even if animal suffering is involved in the process.

8. The slaughter of seals for fur is cruel and should be abolished.

9. Animals killed for food should be slaughtered humanely under strictly controlled conditions.

10. Scientists should use humane alternatives to painful experiments wherever possible.

11. Unnecessary cruelty is usually part of rodeos.

12. The use of fur from wild animals for decorative purposes such as fur coats should not be permitted.

13. Human beings are the only creatures capable of deliberate cruelty.

14. Intensive battery egg production is cruel and unnatural.

15. Dissections and laboratory demonstrations on animals are a valuable way of teaching science.

16. The educational and entertainment value of zoos far outweighs any cruelty that may be involved in holding animals captive.

17. The slaughter of kangaroos in Australia for fur and pet food is cruel and should be abolished.

18. Tail docking of dogs for appearance' sake is a reasonable practice, as long as it is carried out on pups.

19. The export of live food animals such as sheep should be prohibited because it is extremely inhumane.

20. A wholly vegetarian diet is unnatural for people.

21. Although some scientific experiments on animals may seem trivial or repetitive they should nevertheless be permitted.

22. Films or videotapes should be used instead of live animals for teaching purposes in science.

23. Circus animals probably enjoy their roles as much as does the audience entertained by them.

24. Shooting and hunting teach a child independence and resourcefulness and are worthwhile activities.

25. Leg-hold traps (such as used in rabbiting) are cruel and should be abolished.

26. The keeping of exotic pets (wild animals) should be prohibited.

27. It is morally wrong for people to kill animals for food when alternative vegetarian diets are available.

28. Experiments on animals are acceptable provided suffering is eliminated by the use of analgesics (pain killers) or anesthetics.

29. Modern farming is a business, and efficient production methods should be the first priority of farmers.

30. Scientists themselves are best able to determine whether the pain inflicted in an experiment is necessary.

Appendix VI

Survey instrument of Scott Plous (1991,1998). Unpublished, and included here with the author's permission. Data were published from the instrument in two articles "An attitude survey of animal rights activists" *Psychological Science* 2 (3):194-196 1991, and "Signs of change within the animal rights movement: results from a follow-up survey of activists" *Journal of Comparative Psychology*, 112(1):48-54 1998.

OPINION SURVEY

This survey is designed to explore attitudes relating to animals and animal rights. Although some of the questions are necessarily over-simplified, try to answer EVERY item as best you can. The survey is 100% anonymous, so please be as frank as possible.

(1) Do you believe in the philosophy of animal rights? (that is, the doctrine that all animals possess certain fundamental rights)

_ Yes _ No _ Not sure

(2) Would you describe yourself as a participant in the animal rights movement?

_ Yes _ No

(3) If "Yes," how long have you been involved? _____ (years) _____ (months)

(4) Would you describe yourself as an animal rights activist? _ Yes _ No

(5) Of the following six issues, which one do you think the animal rights movement should focus on most? Place a check mark beside the *single* most important topic listed below.

The treatment of:

_ Animals used for food
_ Animals used in education
_ Animals used in research
_ Animals used for clothing or fashion
_ Animals used in sports or entertainment
_ Animals in the wild

(6) If you take into account factors such as pain, death, and the total number of animals involved, which type of animal use inflicts the largest amount of suffering each year? (check *ONE*)

_ Hunting
_ Trapping
_ Dissection
_ Animal research
_ Animal agriculture
_ Other (please specify:_)

(7) Which of the following statements comes closest to your point of view? (please check only *ONE* statement)

_ If it were up to me, I would eliminate all research using animals
_ If it were up to me, I would eliminate some but not all research using animals
_ If it were up to me, I would continue animal research at current levels
_ If it were up to me, I would increase the amount of animal research

(8) Do you ever buy products made with leather? _ Yes _ No

(9) Which of the following best describes your diet?

_ Non-vegetarian (regularly eat meat, poultry, fish, or seafood)
_ Semi-vegetarian (occasionally eat meat, poultry, fish, or seafood)
_ Vegetarian (do not eat meat, poultry, fish, or seafood)
_ Vegan (do not eat *any* animal products)

(10) Which statement comes closer to your image of a typical animal researcher?

_ Cares about laboratory animals but feels that research is needed
_ Doesn't care about laboratory animals; views animals as expendable supplies
_ Not sure

(11) Which comes closest to your views concerning break-ins at animal laboratories?

_ In the long run, break-ins are an effective way to discourage animal research
_ In the long run, break-ins are *not* an effective way to discourage animal research
_ Not sure

(12) Which statement best describes your position?

_ I am in favor of break-ins _ I am opposed to break-ins _ Not sure

(13) In general, which kind of research causes more animal suffering—medical or psychological/behavioral? (for purposes of this survey, exclude toxicological tests such as the Draize or LD-50 from the category of medical research)

_ Probably medical
_ Probably psychological/behavioral
_ Cause equal amounts of suffering
_ Neither causes suffering
_ Not sure

(14) In general, which kind of research yields more useful information?

_ Probably medical
_ Probably psychological/behavioral
_ Yield equally useful information
_ Neither yields useful information
_ Not sure

(15) If one kind of research were to be eliminated and one type to be continued, which type of research would you choose to eliminate?

_ Medical _ Psychological/behavioral _ Not sure

This section is for statistical purposes only, so we may get an idea of who has responded to the survey.

(16) Year of birth: 19_____ (17) Your sex: FM (18) State of Residence: ____

(19) If D.C. non-resident: Did you travel to Washington to join the March for the Animals?

_ Yes, that's the main reason I came_ No, but since I'm here, I thought I'd march
_ Yes, but that's not the main reason _ No, I don't plan on marching

(20) How would you describe your race?

_ Asian-American _White _African-American _Latino _Other(specify:_____)

(21) I have completed: (check *ONE*)

_ Grade school _ High school _College _Post-college degree (e.g., masters, doctorate)

ONE LAST QUESTION...

Recently, a leading animal rights activist proposed a 10-point plan for conflict resolution between the animal rights movement and animal researchers. The main points of this plan are summarized in the following table. Please read the table and indicate whether you would support this proposal.

If Animal Researchers Will...	Then Animal Rights Activists Will...
(1) Stop trying to portray animal rights activists as terrorists	Condemn all violent forms of activism, including arson, break-ins, vandalism, and bomb threats
(2) Open all animal care and research committee meetings to the public	Agree not to disrupt animal care and research meetings or harass any of the participants
(3) Hold regular open houses at laboratories and address any problems that the public detects	Stop using exaggerated or outdated photographs from animal research that is no longer conducted
(4) Show a willingness to police themselves and discipline researchers who are abusive to animals	Discuss suspected animal abuses with the institution in question, before going to the media
(5) Report the number of rats, mice, and birds used in research, even if tallies are not required by law	Stop using old or inflated estimates of how many animals are used in research
(6) Refrain from forming political alliances with groups that favor animal use (e.g., hunters)	Refrain from forming political alliances with groups that are anti-science
(7) Recognize the value of animal protection groups that are willing to work cooperatively	Recognize the value of animal research groups that are willing to work cooperatively
(8) End animal dissection in classes below the upper division university level	Stop using the dissection issue to generate opposition to animal research
(9) Quit buying animals from random source dealers (i.e., animals not bred for research)	Quit claiming that biomedical researchers are responsible for families losing their pets
(10) Acknowledge criticism respectfully, recognizing that activists and researchers share common ground	Express criticism respectfully, recognizing that activists and researchers share common ground

(22) In general, what is your opinion of this proposal? (please check *ONE* box)

_ I would strongly support it
_ I would support it
_ I would oppose it
_ I would strongly oppose it
_ I am not sure how I feel

Thank you very much!

Appendix VII

Survey instrument of Harold Takooshian (1988). Unpublished, and included here with the author's permission.

Survey of psychologists

How do psychologists regard the current debate on the use of animals in research and other settings? Please give us your frank opinion on each item below, by circling (A) Agree, (D) Disagree, or (N) for No opinion or mixed feelings. Of course, there are no right or wrong answers, only your personal views. This survey is anonymous. Phone Fordham University if you wish a free copy of the results, 212-636-6393. **Thank you.**

1. D N A Hunting animals is a healthy, enjoyable sport.
2. A N D It troubles me to see animals in cages.
3. A N D Animal suffering is no different from human suffering.
4. A N D It is immoral to own a fur coat.
5. A N D Animals have inherent rights, just as humans do.

6. A N D I would feel unsafe using a food or drug until it has been tested first on animals.
7. D N A I would like a ban on any research causing pain to animals, even if the results might promote human welfare.
8. A N D The welfare of animals is secondary to the goals of biomedical science.
9. A N D Surgery students should practice as much as possible on living animals.
10. A N D Since many people are alive today due to findings of animal research, this fully justifies the sacrifice of laboratory animals.

11. D N A Society should limit scientific inquiry.
12. D N A There are areas where even science should not tread.
13. A N D The more society invests in scientific research, the more society will advance.
14. A N D It is the scientist's duty to study even the most controversial issues -- genetic engineering, test-tube babies, cloning ...
15. A N D The progress of society is impossible without scientific research.

16. People may support some uses of animals more than others. For each use of animals below, please circle whether you personally (A) Agree, (D) Disagree, or (N) have no or mixed opinions on the need to hurt or kill animals to:

a. A N D Do medical research to benefit humans.
b. A N D Do medical research for scientific curiosity.
c. A N D Do psychology research on behavior (e.g. stress).
d. A N D Do veterinary research that benefits animals.
e. A N D Train medical students.
f. A N D Test industrial products (e.g. pesticides).
g. A N D Test household products (e.g. sprays).
h. A N D Test foods.
i. A N D Test drugs.
j. A N D Test cosmetics.
k. A N D Make fur clothes.
l. A N D Eat meat.

17. Yes No I have worked in an animal laboratory.
If so, type of research:_____ type of animals:_____

18. Yes No I oppose animal experimentation. (If so, I would substitute:) (More space on back.)

19. I feel that if scientists do research involving pain or death to laboratory animals, standards regulating their work should be set by (check all that apply):

___other scientists ___government officials ___No one ___Not sure
___humane societies ___panels of public citizens ___does not matter.

Please describe yourself:

20. Age:_____
21. Sex:_____
22. Occupation (include specialty within psychology): _____
23. Current educational level: __ college student __ BA/BS __ Graduate student __Masters __ Doctorate.

Appendix VIII

Published in Furnham, A. and Pinder, A. (1990). Young people's attitudes to experimentation on animals. The Psychologist, 10, 444-448.

Table 1

Means, Standard Deviation for the 63 items of FATAS: Scores 1.0 - 2.50 were termed strongly disagree, 2.51 - 4.00 disagree, 4.01 - 5.50 agree and 5.51 - 7.00 strongly agree. Each question was answered on a 7 (agree) - 1 (disagree) scale.

	Agreement	Mean	SD
1. As long as they have been registered by the Home Office (or equivalent bodies), scientists should be allowed to do research on animals.	Disagree	3.45	1.9
2. Because animals are so different from humans there is no way results from experiments on them can be relevant to humans.	Disagree	2.99	1.7
3. There is no justification for the use of animal experimentation in the testing of cosmetics.	Strongly Agree	5.71	1.8
4. Because we can never be sure just how much animals do suffer in experiments, we should not use them in experiments.	Agree	4.29	1.9
5. Non-vegetarians who want to abolish animal experimentation are hypocrites.	Disagree	2.64	1.7
6. We cannot leave ethical judgements on animal experiments solely in the hands of scientists.	Strongly Agree	5.68	1.5
7. There are not many issues which make me as angry as the abuse of animal rights.	Disagree	3.52	1.9
8. I think people over-react to the animal experimentation issue.	Disagree	3.43	1.9
9. Animal experiments are an efficient and cost-effective way to gather information.	Disagree	3.58	1.8
10. Legislation regarding animal experimentation is too lax	Agree	5.29	1.6
11. Animal experiments are never unnecessarily painful.	Disagree	2.70	1.7
12. I agree with the "liberation" of animals from experimental laboratories.	Disagree	3.77	1.9
13. Research from animal labs produces great benefits in the lives of both animals and people.	Agree	4.36	1.7
14. Food, water and sleep deprivation studies on animals should be illegal.	Agree	5.01	1.9
15. Many claims made by animal activist groups are false.	Disagree	2.94	1.5
16. Thousands of pounds are wasted yearly in animal experimentation.	Agree	4.42	1.5
17. Animals in danger of extinction should never be used in experimental tests.	Strongly Agree	6.28	1.5
18. The incidence of abuse in animal experimentation is low.	Disagree	2.92	1.5
19. I would have no objection to working in an animal lab.	Strongly Disagree	2.47	1.8
20. Using laboratory animals in observational studies (to study social groupings, territory, imprinting, etc.) is fine	Strongly Agree	5.56	1.5
21. Steps should be taken to prevent the commercial duplication of animal experiments by competing companies.	Strongly Agree	5.97	1.4
22. I think the government should discontinue giving research grants to animal experiments.	Disagree	3.88	1.9
23. All lethal experiments on animals of all sorts should be banned.	Agree	4.98	2.0
24. I think most of the experiments using animals are necessary.	Disagree	3.39	1.8
25. In many animal experimentation labs the animals have an easier life than they would in the wild.	Disagree	2.59	1.6
26. I would be willing to join the National Anti-Vivisection Society or another similar group.	Disagree	3.66	2.0
27. Although animal experimentation provides scientific information, it is not worth the suffering the animals must endure.	Agree	4.25	1.8
28. I think funds that are presently used to support animal research should be diverted into other programmes that could help animals	Agree	4.18	1.8
29. Drugs must be tested before they are administered to the public and there is no method other than animal experimentation.	Disagree	3.91	1.7
30. Animal experimentation is necessary for the development of surgical techniques.	Disagree	3.83	1.7
31. I would be willing to join an animal welfare group that condones violence.	Disagree	3.11	2.0
32. It is wrong to use animals for any purpose - food, clothing, transport or experimentation.	Disagree	2.80	1.7
33. It should be illegal to use primates (e.g. monkeys) in experiments.	Disagree	3.86	2.0
34. More neglect, abuse and cruelty occurs to farm and pet animals than in research facilities.	Disagree	3.69	1.9
35. Researchers in animal labs have a great deal of restrictions on their work and I believe they stick to them.	Disagree	3.66	1.7
36. There should be more animal experimentation in areas of medicine where cures are not yet known (AIDS etc.)	Agree	4.39	1.8
37. Many experiments are performed needlessly in order for researchers to obtain results for a degree.	Agree	4.80	1.9
38. One example of the uncontrolled state of animal research is the whaling by Japan and Iceland for "scientific purposes".	Strongly Agree	5.53	1.6
39. All products should be legally bound to indicate if they used animals to test them so shoppers could avoid purchasing these items.	Strongly Agree	6.02	1.5
40. I support the attacks on shops selling furs.	Disagree	3.31	2.0
41. I believe in total abolition of animal experiments	Disagree	3.08	2.0
42. I think it is unethical to cull animals, regardless of purpose.	Agree	4.12	2.0
43. I am very concerned about the use of animals in laboratory experiments	Agree	4.97	1.8
44. Animals in shelters (Battersea Dogs Home, etc) that have to be put down might as well be used in experiments that could provide valuable information.	Disagree	3.39	1.8
45. Any animal research that has an immediate specific application should be allowed.	Agree	4.02	1.8
46. The excessive controls and strict legislation which surrounds experiments in animal labs often hinders their work.	Disagree	3.40	1.8
47. Using animals for testing is more morally acceptable than using them for food and clothing (fur, leather) goods because these can be obtained from other sources.	Disagree	3.63	1.8
48. Replications of previous experiments using animals should be stopped.	Disagree	5.47	1.7
49. The importing of animals for testing should be banned.	Agree	4.94	1.8
50. We need to continue animal laboratory experiments.	Agree	4.31	1.8
51. If you oppose animal experiments about learning, then you must also oppose horse and dog racing, sea world shows (dolphins, etc,) and seeing-eye dogs.	Disagree	3.66	2.0
52. All animal experimentation is normally incorrect.	Disagree	3.61	2.0
53. I think that all animal experimentation will be stopped by the year 2000.	Disagree	2.54	1.8
54. Painful experiments on animals should not be prevented because they can provide knowledge about and relief from human suffering.	Disagree	3.42	1.8
55. The short life span of animals allows hereditary and long-term individual effects to become visible very quickly: this is a valid reason to allow animal testing.	Disagree	3.68	1.8
56. Experiments should be allowed on insects and reptiles but not mammals.	Strongly Disagree	2.38	1.8
57. Fundamental (for no specific purpose) research using animals is valid.	Disagree	2.67	1.8
58. If I had a medical problem that would be terminal without the use of drugs that were tested on animals I would take the drugs.	Strongly Agree	5.90	1.5
59. Some experiments (space programme, radiation, etc.) cannot be done without animals.	Agree	4.21	1.8
60. All experiments using animals should be approved by a state government committee.	Strongly Agree	5.75	1.5
61. I would not donate money to a charity that supported animal experimentation.	Agree	4.52	2.0
62. Studies in animal labs use unnecessarily large numbers of animals.	Agree	4.84	1.8

Appendix IX

Cover for Day, Nancy (2000). Animal Experimentation: Cruelty or Science? (Rev. ed.). Berkeley Heights, NJ: Enslow Publishers, Inc.